THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

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PRINCIPAL CONTENTS

ILLUSTRATIONS PAGE

NEW OFFICES, PETERBOROUGH: By Howard V. Lobb and Partners 47

SHOPPING PRECINCT, GLENROTHES: By Peter Tinto ... 53

NOTRE DAME DE FRANCE: By Corfiato, Thomson and Partners 57

CHARLES DICKENS SM SCHOOL, BROADSTAIRS: By Woodroffe, Buchanan and Coulter 66

GREY COAT HOSPITAL, WESTMINSTER: By Laurence King 71

KENNINGTON POLICE STATION: By J. Innes Elliott ... 76

STUDENTS' UNION, LONDON UNIVERSITY: By Adams, Holden and Pearson 80

ARTICLES

THE WAY AHEAD: New Year Messages 44

EDUCATION FOR BUILDING: Interchange of Ideas: By Bryan Westwood 45

GREECE: Ancient and Modern: By Arthur Kenyon 63

NOTES OF THE WEEK ... 87

LACED VALLEY: Adventure in Construction: By James Burford 90

PAGE

CORRESPONDENCE 92

RIBA PRIZES AND STUDENTSHIPS: Winners 92

THE MOTORWAY AND ITS ENVIRONMENT: RIBA Paper 93

SLUM PROBLEMS OF MARSEILLES 95

HOUSING PROGRESS: November Figures 96

THE SHOP STEWARD: Has he a Place within the WRA? ... 98

COMPARATIVE PRICES OF MATERIALS 98

USAF HOUSING CONTRACT... 99

INQUIRY BUREAU 100

ORDNANCE SURVEY: Need for Continuous Revision 101

MONOPOLIES BILL: BID Objections 101

OUTSIDE PAVING WORKS: Keeping Maintenance Down: By J. H. Arnison 103

CONSTRUCTIONAL TRENDS IN CONCRETE: By J. E. Guest 104

PRICES CURRENT OF MATERIALS 106

RATES OF WAGES 109

HOUSE PURCHASE: Land Scarce and Costly 111

PLANT AND EQUIPMENT ... 113

OVERSEAS BUILDING... ... 116

FUTURE CONSTRUCTION ... 119

NEWS SUMMARY

FAITH IN NECESSITY must be the philosophy governing the creation of motorways, Sir Owen Williams has told the RIBA p. 93

THE VIEW that an emphasis on technique is harmful to architectural training has been expressed by a Midlands student. p. 94

WHETHER THE SHOP STEWARD should have a place within the Working Rule Agreement is examined by a correspondent. p. 98

FAILURE to keep the Ordnance Survey up to date might have expensive results, two experts have told the RICS. p. 101

OBJECTIONS to recommendations contained in the Monopolies Bill have been made by Building Industry Distributors. p. 101

OBSTACLES in the way of increasing private housebuilding included sterilised land, the Government's credit policy and high legal costs, the Registered House Builders have been told. p. 111

PORTLAND CEMENT in 1955 reached a new production level. p. 111

THE WAY AHEAD

"THE omens at the opening of a new year are favourable. The steps taken by the Government to reduce the strain on the national economy should provide an opportunity for better planning of work and even faster progress." In this extract from the New Year Message to our readers from the new Minister of Works, Mr. Buchan-Hepburn, there is a distinctly topical touch—that of a wise parent who tells his young family that they will feel all the better in the morning for having a little less cake tonight.

The building industry will not disagree with the advice tendered; in fact, the President of the National Federation, in his message, frankly admits that, bearing in mind the limitations of labour and materials resources, some slight reduction of the overall building programme at this stage may help rather than hinder efforts to build quickly and economically. Mr. Harvey Frost will command equal support when he reinforces the warning against letting the industry lose momentum to a point where it cannot effectively respond when a reversal of present economic policy makes fresh demands upon it. The Minister, we may be sure, will have this constantly in mind.

It is hardly possible to guess at the probable volume of work in the year ahead. While present contracts are running, there will be a period of well-being, but private building schemes must be affected by interest rates, as also municipal housing; much will depend on the extent to which clearance and rebuilding of outworn property replaces normal council housing. Due to the often protracted negotiations which normally attend slum clearance work, it would be unwise to expect from this source much actual building during the current year.

Meanwhile it is highly satisfactory to note that the industry is taking seriously the charge laid upon it to improve its methods and to reduce cost. While the problem of getting across the practical results of research has still not been fully solved, builders are actively concerning themselves with strengthening the management side, both on a short-term and, through the new Board of Building Education, on a long-term basis. Architects, with the McMorran report in front of them, are taking a new look at their methods of educating new entrants to the profession in which more attention will be given to technical efficiency without interfering with the development of ability to design. Materials manufacturers, led by the cement interests, will, it is hoped, increasingly assist towards lower building costs by a standstill of prices.

Finally, the forthcoming conference at the RIBA on education for building in a wider sense than yet envisaged contains the seed of great hope of an industry that shall be really integrated. Ideas, in short, are here in plenty: what we shall all look for in 1956 is their translation into useful action.

THE WAY AHEAD

New Year Messages from Ministers and the Industry's Leaders

From the Rt. Hon. Patrick Buchan-Hepburn, MP, Minister of Works

ON assuming office as Minister of Works, I am glad to send a message of good wishes for the New Year to *The Builder*.

The first year of freedom from building controls has been a busy one for the building industry, and steady if modest progress has been made in increasing output. The bad weather at the beginning of the year, which held up work in many parts of the country, has been offset by remarkably good weather throughout the summer and autumn.

The omens at the opening of a new year are favourable. The steps taken by the Government to reduce the strain on the national economy should provide an opportunity for better planning of work and even faster progress. I am confident that the building industry will take full advantage of the opportunities which 1956 offers.

From the Rt. Hon. Duncan Sandys, MP, Minister of Housing and Local Government

WE have just come to the end of another year of outstanding building effort—a year in which more than 300,000 houses have again been built, in spite of the increasing demands of industry and public services. Reasonable needs have mostly been met without undue delays or bottlenecks, which reflects an efficient and flexible building industry and sound administration.

What are the prospects for 1956 ? It is always difficult and dangerous to prophesy, but the signs today point to the continuance of house building at about the same level. In 1956 there will be an important new factor—the resumption of the drive to demolish the slums and to build new homes to take their place. In the years ahead, slum clearance will account for a much larger proportion of the total house-building programme. No social work is of greater urgency in the interests of both health and well-being. I hope that before very long at least 60,000 houses a year will be devoted to rehousing slum dwellers. It cannot be expected that this rate will be reached in 1956, but the Government intend to make its attainment one of the foremost aims of their housing policy.

I know that I can count on the continued co-operation of all sections of the building industry. I wish you all—builders, operatives, architects and surveyors—a happy and successful New Year.

From Professor A. E. Richardson, KCVO, FRIBA, President of the Royal Academy of Arts

THE vast changes in the social structure, which disprove everything the Victorian prophets expected, have merely intensified the British character. Improvements have been planned in all spheres of activity, but restless dissatisfaction is, beyond doubt, one of the guiding forces of life. It is clear that constant change accompanies all creation and that art is the chief expression of hope.

Curiously enough, the human spirit remains wedded to continuity, prompted by experience and eager to create. We, who are the posterity of other times, understand how things are modified almost without our perceiving the slow and minute changes. What we term progress is merely the new being reformed from the old and tried. The heartbeats of change are slow like the rhythmic movements of a regulator clock. While most people regard the present period as the age of recovery after a disastrous and destructive war, others see events with the more forceful eyes of opportunists. Yet there are seers who refuse to accept the idea that great changes are beneficial.

Let us not lose sight of the fact that our present state of social progress is the outcome of more than a century of illusions. It will, in due course, engender other visions which will, in turn, be regarded with derision. In the long run it is the sequence of periods that really determines the well-being of a people. We are conservative by nature, whatever political label we assume. It is the persistency of the national character that fore-shadows the future which always remains distant and inaccessible. For this reason alone, we can take comfort in the year that lies ahead. The half century has turned ; the year 2,000 is only forty-four years beyond. The orderly progress of a freedom-loving people is not likely to be disturbed by promises of an Utopian existence.

Of course, such ridiculous profundity will not satisfy the theories of designers who are bent on novelty and long to act as tyrants. We must obey the truths of the spirit and get on with our tasks. And, after all, why not cherish illusions with zealous hearts, doing our level best as the spirit moves, not with the idea of notoriety but with love for those who have equal rights ? There will be no miraculous results ; the future is not for our eyes.

Let us be thankful for *The Builder*, the oldest and most trustworthy periodical devoted to the building industry. Let us unite to work for the cause of the arts, embellishing our creations and consecrating them to the national good. There is no time for needless recriminations. And, if we follow this policy with devotion, nothing will remain stagnant and dead, despite the creakings of the Westminster printing presses.

From Mr. C. H. Aslin, CBE, President of the Royal Institute of British Architects

ONCE more we all face the challenge of a New Year to come. And if the way is not altogether straight and plain ahead, that is nothing new. In the past we have faced successfully much worse prospects. Our two major difficulties look like being shortage of capital among our clients owing to Mr. Butler's credit restrictions and shortage of skilled manpower. Both these shortages must be countered by better methods and greater productivity.

I am convinced that we can still greatly improve teamwork among architects, builders and craftsmen, exploring new methods of working together and availing ourselves of new techniques. I welcome warmly the creation of the Board of Building Education, the scheme for training in management and the courses for training foremen which started two years ago and in which the first examination is being held this summer. So far as architects are concerned, we are proposing to follow the precedent we set at our Conference last year by discussing at the 1956 Conference the question of obtaining "value for money." In February we are holding a symposium among architects and builders on drawing office technique to discover how best we can improve this essential tool of our industry. A sub-committee of the Joint Consultative Committee is busy gathering information on how co-operation between architects and builders can be furthered, and this I think is a happy augury to the New Year.

Difficulties are only depressing when one can see no way of tackling them. But I think that we of the building industry can see these various ways and have made a good start on some of them. And I think we can face the New Year with optimism and confidence.

From Mr. G. P. Vale, Chairman, Quantity Surveyors' Committee, the Royal Institution of Chartered Surveyors

AS Chairman of the Quantity Surveyors' Committee of the RICS, I welcome the opportunity which you have given me to send New Year greetings to *The Builder* and to its readers.

Although the building industry will undoubtedly be affected by the financial stringencies of the nation as a whole, it has a great task before it in 1956 which it can fulfil with honour and satisfaction provided that the necessary degree of pre-constructional planning can be undertaken and restraint exercised in controlling tender prices within the industry. The recent pegging of cement and plaster prices is to be welcomed and

it is hoped that the price levels of other materials may be treated similarly.

The industry has many critics, particularly on the grounds of high costs and low production. If proper planning is done in full consultation with all members of the team, cost increases—as the direct and indirect result of variations—can be reduced to the minimum and production can go smoothly ahead without interference. From the work of the Joint Consultative Committee of Architects, Quantity Surveyors and Builders, it is clear that this principle of pre-planning has been accepted by the representatives of the industry. It is for every member of the three constituent bodies to ensure at all times that emphasis is laid on the advantages of pre-contract planning, both to building owners and to all concerned.

It is satisfactory to note during the past year the increasing contacts with the building industry overseas, both on the Continent of Europe and in the Commonwealth. The operational structure of the building industry in the United Kingdom has provided a firm foundation for developments throughout the world, in countries as widely separated as Australia and Denmark. It is our hope that 1956 will increase still further the links with our good friends and neighbours overseas, whom it has been a pleasure to help and advise. During his recent visits to the branches of the Royal Institution in Africa, it is interesting to record that the President of the Institution found quantity surveyors well established as members of the building team and, as in the United Kingdom, their relations with architects and builders were both close and cordial.

Chartered quantity surveyors will join with me in extending to the building industry their good wishes for a successful and productive, as well as a happy, New Year in 1956.

From Mr. Harvey G. Frost, OBE, FIOB, President of the National Federation of Building Trades Employers

IN attempting to forecast the outlook for the building industry in 1956, one must have some regard for the likely effects of the Chancellor's Autumn Budget on the spending policies of public and local authorities.

I think that many builders would agree that, bearing in mind the limitations of our resources of labour and materials, some slight reduction of the overall building programme at this stage may help rather than hinder us in our efforts to build quickly and economically. The Budget measures and the cuts in the housing subsidies may be unavoidable but the situation to be guarded against is precisely that to which you, Sir, referred in the leading article entitled "The Amber Light," published in your issue of November 25—namely, the "concertinaing" of the building industry. Momentum on the sites must not be allowed to run down so far that when building owners—private and official—are ready to recommence building after

(*Messages continued on page* 86.)

EDUCATION FOR BUILDING

The Interchange of Ideas

By BRYAN WESTWOOD, AADipl, FRIBA

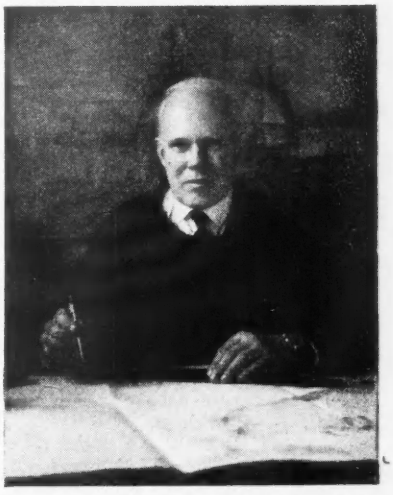
At a Conference convened for January 31 at the RIBA, the question of education within the context of the building industry will be discussed by representatives from the professional and executive sides of building. In view of the importance of this subject (which has been under active consideration by several independent committees and organisations) Mr. Westwood has been invited to contribute the article which follows. Mr. Westwood, who is President of the Architectural Association, is senior executive partner of the firm of Westwood, Sons and Harrison. The article expresses his personal views.

WHY give a generous allotment of space in this special New Year issue to Education? Why, when there are more good buildings to illustrate than there have been for the past 15 years, should the attempt be made to divert readers' attention from pleasant pictures to the contemplation of a difficult subject such as this?

I would suggest that it is worth while at this moment to discuss ways and means of improving the quality of building because a volume of public opinion has become sufficiently critical to be aware of the disparity between the usual and the best. The reception given to the "Outrage" number of *The Architectural Review* provides an example of the increased sensibility of the public to the architectural scene. The suburban sprawl, bad buildings, the general litter—this story has been told many, many times before but has never created such a stir nor added a new word to the vocabulary.

In considering the question of education for building here, it is implied that the building industry itself is responsible in large measure for the present scene. Is our system wrong? Are we training our designers as they should be? Are we making the right use of the abilities of those engaged in the industry? This article is an attempt to stimulate discussion along these lines. I think that the fundamental malaise which exists derives to a great extent from the relationship between the three sides to the building team.

Since early in the nineteenth century, architects and engineers have gone their separate ways. The process in the beginning was not immediately apparent, because individual engineers such as Telford and Brunel were sensitive men who gave an architectural quality to their work. It is not perhaps too far-fetched to say that the separation was rather like the evolution of mammals, the architect being akin to the monsters that remained in the sea, maybe perfecting themselves in the particular environment, but not turning their fins into feet or wings. The architect failed to grasp the science of engineering which was in fact the new science of building. There was created the seed of present failures. The industrial revolution, together with the vast increase in population it initiated, led to building on an unprecedented scale, but the architect, as Gordon Russell has put it, had "contracted out." Into the vacuum stepped the technician—the engineer. He understood the new ideas and techniques, but alas, he was for the most part limited to a narrow conception of building. Engineering was a necessity; architecture a luxury. Those who could afford it, and thought it worth while, em-



BRYAN WESTWOOD, AADipl, FRIBA

ployed an architect to hang a façade in the old style on a structure; the majority did not bother. Art was ousted and the public eye gazing on so much ugliness grew dim.

Ideas have changed. It is, I think, being realised that architecture and engineering are not entirely dissimilar functions but represent merely two aspects of building. The realisation that the perfect engineering solution does not necessarily make the perfect building; the need for engineers to use materials for their intrinsic qualities and not only for efficiency; the architectural impact of the plastic and sculptural qualities of concrete, hitherto the province of the engineer; the growing consciousness of informed lay opinion that the way to beautify large structures is not to call in the architect to hang on a skin to cover the bones contrived by the engineer (or the converse) but for the architect and engineer to work together: it is because of things such as these that the relation between architect and engineer has become a live topic. How can the two be fused so that a building is once more a single architectural scientific conception?

Last March Dr. Bronowski read a paper at the RIBA in which he virtually

urged the architect to consider engineering as part of his province.

> "All architecture is invention. . . . His (the architect's) invention is only free when it rises out of his own scientific as strongly as out of his artistic imagination."

The following November saw Professor Nervi in London—an engineer/architect/builder personifying what he called "The Complete Architect." Among the many significant things he had to say was the following:

> "To deal worthily with ever more ambitious architectural projects the architect must possess and synthesise in himself aesthetic sensibility, profound understanding of structural needs and a precise knowledge of the methods, possibilities and limitations of constructional techniques."

It is understandable that, despite its cogency, the reasoning of Bronowski might be dismissed as mere theory, but Nervi's buildings are there, very large indeed, for all to see. Nervi, too, stresses the necessity for a third voice at the design stage of building, that of the builder.

Processes have reached a degree of complexity whereby the builders are acquiring and developing a formidable body of expertise—vastly important, special to themselves. It arises from the actual methods of carrying out the work and organising the labour and material processes on the site. It is a glaring defect in conventional building arrangements that this is ignored when tenders are sought. This particular aspect of building has little to do directly with the engineer or the architect, but the principles behind it are not beyond their powers of comprehension.

Is the concept of engineering so difficult that no one with *designing* sensibility can grasp it? Nervi may be unique in the skilfulness of his conceptions, but in his training and mental processes surely not. Lesser men may build lesser buildings, but there seems to be no valid reason why they should not *learn* the same way. There seems to be the strongest of arguments that aspirants to the three qualifications combined in his person should be educated together to the limit of practical possibility. The need is pressing, even if there is danger in exponents setting up as complete architect-constructors who are no more than complete charlatans. That risk must be accepted.

The architects became conscious of the need for teaching for their profession more than a hundred years ago when the Architectural Association was founded. Its courses gradually developed and have formed the pattern for architectural education ever since. Writing as an architect, I would suggest that fundamentally engineering education is simpler. It is concerned with tangible things and goals that can be seen clearly, at least in the early stages. From the learners' point of view those goals may actually be more difficult to attain than the less tangible ones set before the architectural student. On the other hand, I am told by an engineering lecturer, that concurrently with the need for more exacting standards of calculation posed by the developments in reinforced concrete, there has been development in mathematics which have simplified the solution of the problems which arise. For the teacher there is the end-product of a "good engineer" in view, a figure whose qualities can be comparatively easily set down on paper. The "good architect" is a conception about which there are widely differing views even among those who should speak with authority. The builders, I would suggest, have got the exciting and exacting job of exploration still to do.

The worthy idea of apprenticeship dies hard; for some while, no doubt, it will continue to be the method by which the majority of builders are trained, their aptitude for management being developed largely fortuitously through craftsmanship and the handling of men on the job. But the complexity of large-scale building is such that a person entirely different from the craftsmen is required to develop the expertise already mentioned and to concentrate on organisational problems. The "exploration" lies in trying to build a road towards a career in building which offers an attraction to the bright boy interested in building and about to leave school—the boy who otherwise becomes an engineer or an architect.

A Common Start

It seems to me urgently necessary that students for all three facets of building should start by producing, and therefore more fully understanding, the same kind of drawings; the engineer later giving a mathematical emphasis and the architect an artistic one. The builder need only go far enough to understand properly the principles underlying the drawings of the other two, before specialising in his own setting-out drawings.

But the area of common ground extends far beyond elementary drawings. All three have to acquire a feeling for the use of materials and to be logical and analytical in their use. While the builder is specialising in the principles of using mechanical aids in moving materials, the engineering student might be studying their mechanical properties, and the architect colour texture and tactile qualities. *Inter alia* all would be concerned with weathering, all equally need to study the legal and contractural side of building and to be made aware of the development of alternatives to conventional tendering procedure.

Since the coming of the Registration Act, whatever else architects may be taught, basically the requirements of the examinations giving the qualification "Registered Architect" must be met. A body of opinion more interested in examination than education is thus liable to grow up.

At present any logical reorganisation of building education comes up at once against established systems of examinations. No course is likely to succeed if it does not in the end produce graduates with recognised professional qualifications. I would, therefore, suggest that builders should start with architects and that a small number of specially selected post-graduate builders should return for the equivalent of an Army "Staff Course" with architects or engineers. Architects must have a better technical education coupled with a better grasp of the "humanities." I emphasise the humanities because of the vital importance of fair and intelligent leadership in building teams. The leader, I have no hesitation in saying, should be the architect (as his very name implies). His training should be partly non-technical and designed specifically to quicken his mental processes. It should hammer away at basic principles, whether concerned with architectural design, mechanics, professional practice or the properties of materials. In my view, the student can easily spend too much time learning the answers, instead of mastering the principles which would enable him to ask the right questions.

Against a background of two years' National Service and two years' practical experience, the normal five-year course of training to become an architect appears to be too long. More thorough basic training must mean some curtailment of detailed studies, and if the course is to be shortened, as I think it should be, this process would be severe, but not, I think, impossible. The course would be more valuable, and its lessons more readily assimilated, if one of the two years of practical experience were to be sandwiched invariably within a shortened full-time course, as has been much advocated of late.

Coming to the teaching of each separate profession, I think it important that in *architectural* schools, engineering should be divested of mumbo jumbo. The general teacher should not call in specialists unless this is really necessary; the tendency to do so only increases the separation of the two professions. *Engineering* students should be given some idea of how architects work and think. I believe most architects have a reasonable idea of the aims and methods of engineers, but on the other side, speaking in general terms, it seems true to say that petty abuse of shortcomings of architects, whether merited or not, tends to cover an almost complete ignorance of current architectural thought.

A joint conference is to be held this month to discuss education within the context of the building industry. It is to be hoped that the conference will not become too preoccupied with examinations or the immediate suitability of graduates for office work, and will look penetratingly at the larger aspect of the education of all parties to building. Better training is surely one of the more important ways in which to achieve better building—an end as much to be desired now as it has ever been. In a land where the ordinary man's knowledge of the arts is usually limited to literature, cost is too often the only criterion by which building projects are judged. As one result, the natural beauty of our country is being eroded away. It is the clear duty of those in charge of the education of architects, engineers and builders to see that the necessary skills are developed so that building goes forward with greatly improved technique, and above all, really inspired design.

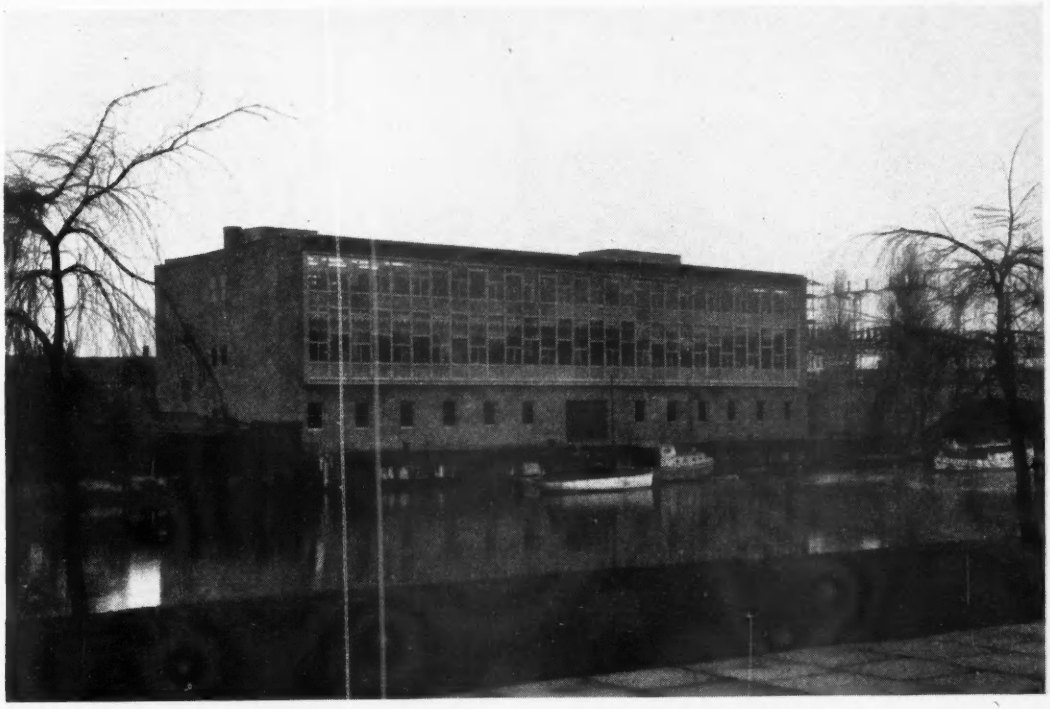
New Offices, Peterborough
for Mitchell Engineering, Ltd.

HOWARD V. LOBB & PARTNERS (Howard V. Lobb, CBE, FRIBA, and John Ratcliff, OBE, FRIBA), Architects

K. A. DAY and IAN C. BROWN, ARIBA, Assistants

WALTER C. ANDREWS, BSc, Consulting Engineer

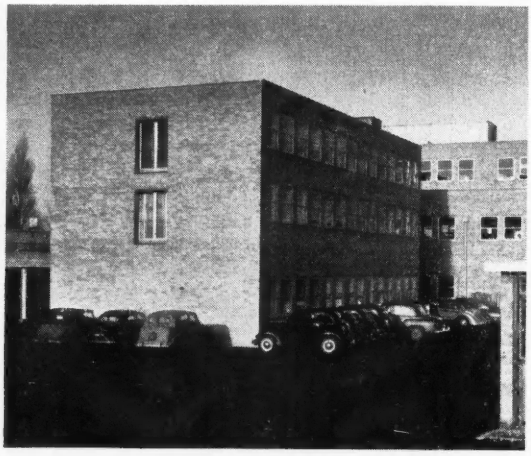
MITCHELL CONSTRUCTION COMPANY, Builders

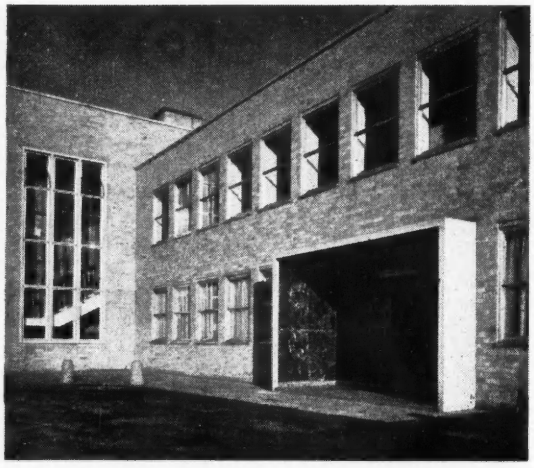


North elevation, looking across the Nene, and, below, by night.

THE decision of Mitchell Engineering, Ltd., to create new offices on the bank of the River Nene at Peterborough presented the architects with a challenge and an opportunity; the challenge arising from the fact that the site is on the main approach to the city, with a view of the Cathedral in the middle distance. With this in mind, the height of the building has been restricted to ground and two upper floors. Throughout the project the greatest help has been forthcoming from the City Engineer and the City Planning Officer. The whole project, in fact, is a notable example of team work.

Construction.—Since the ground is of low-bearing capacity with a high water table, the structure is carried on reinforced concrete piles. To achieve erection speed, a steel frame has been used, with reinforced concrete





Rear elevation to yard, showing provision for car parking (top); detail of main entrance surround (centre) and, below, the elevation to the bridge. The scaffolding is in connection with the sculpture mural, being executed by Arthur J. Ayres.

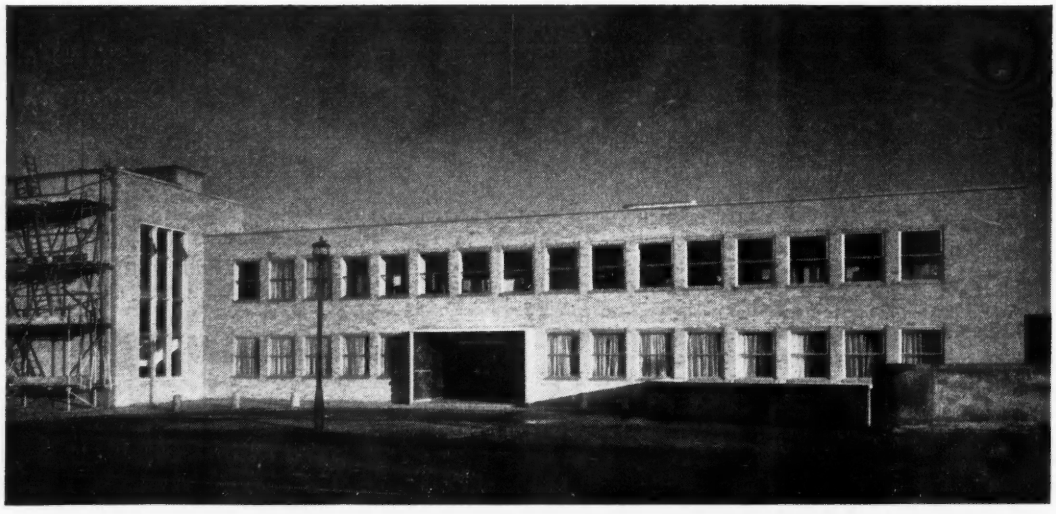
floors. The building is clad with a mellow Loughborough brick which does not assert itself against the adjacent Customs House and other buildings. The main flank wall to the bridge is decorated with a great sculptured mural, now being executed by Mr. Arthur J. Ayres, whose design was placed first in a competition limited to seven sculptors. The theme of this work is the history of scientific and engineering thought throughout the ages. Arranged round a central group of three figures depicting the essential constituents of modern industry—Administration, Design and Works—are various historical figures, Archimedes, Minerva, Bishop Bradwardine (who originated the calculus) and Isaac Newton among them.

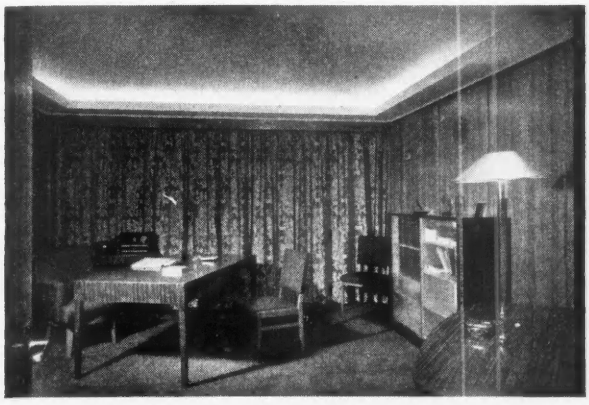
Internal Planning.—This revolves round the drawing office, the most notable feature of which is the ceiling which is a series of aluminium troughs. These are supported on a grid of pipes through which hot water for heating circulates. The arrangement of this ceiling is shown in a detail drawing. The great north window is double-glazed for heat conservation. Heating in other rooms is by pipes embedded in floors. All rooms are air-conditioned.

Lighting generally is by fluorescent tube, but in the drawing office this is incorporated in the ceiling, and here lighting is controlled during the hours of daylight by photo-electric cells on the roof. These face north and can be adjusted so that when the sky brightness falls below a certain intensity due to cloud, the lighting in the drawing office comes on automatically. Special attention has been paid to sound-deadening.

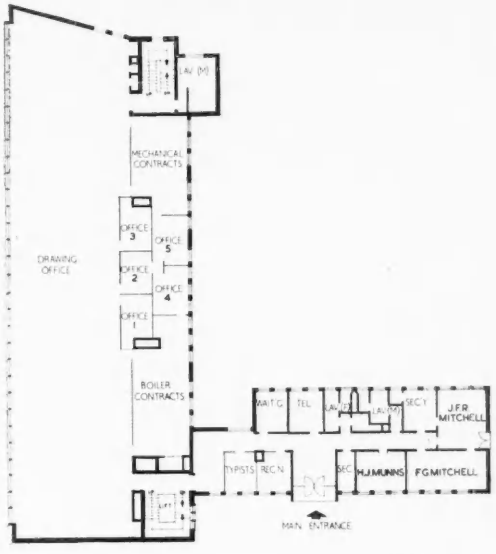
Special features include a tea-preparation room on the ground floor, and a coin-box telephone on second floor for private calls. There is locker accommodation for every member of the staff.

The building was erected by Mitchell Construction Co., Ltd., whose resident agent was Mr. L. A. Kite.

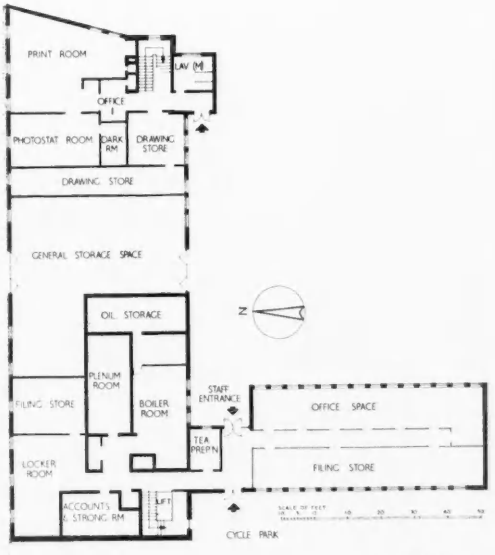




Left : Managing director's office. Below : Main north window, facing River Nene. Mullions and frames are in aluminium, the panel filling being riven Westmorland slate.

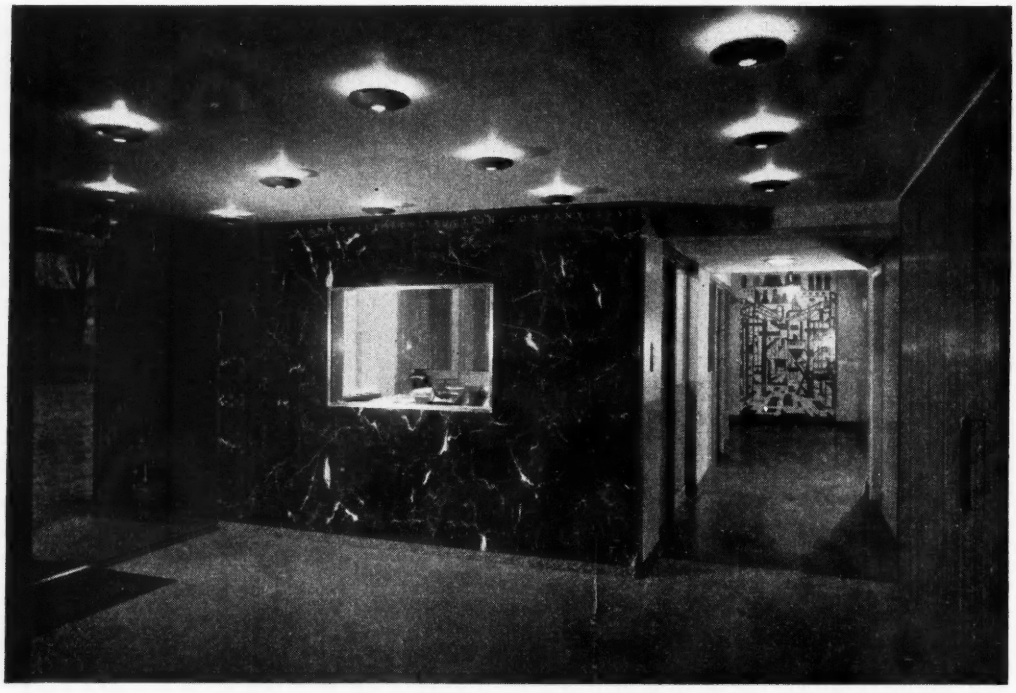


FIRST FLOOR PLAN

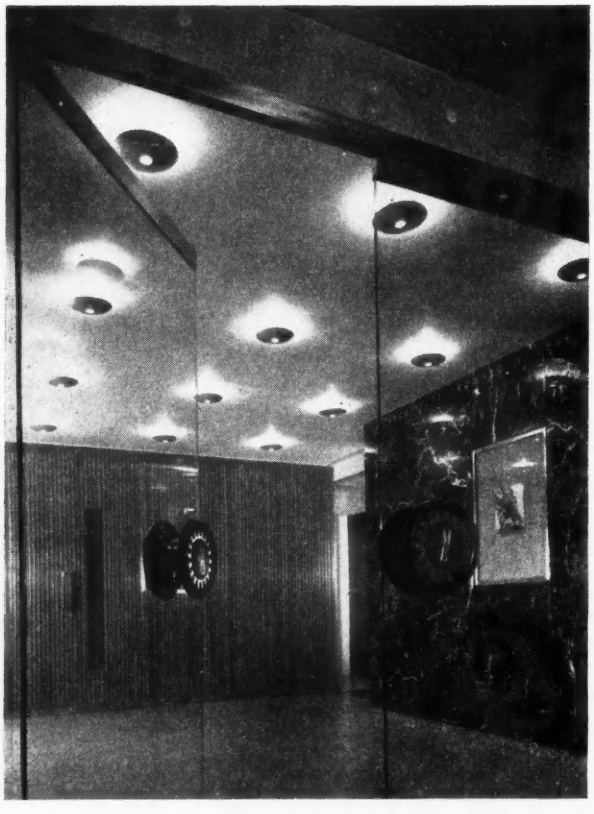


GROUND FLOOR PLAN

SECOND FLOOR PLAN



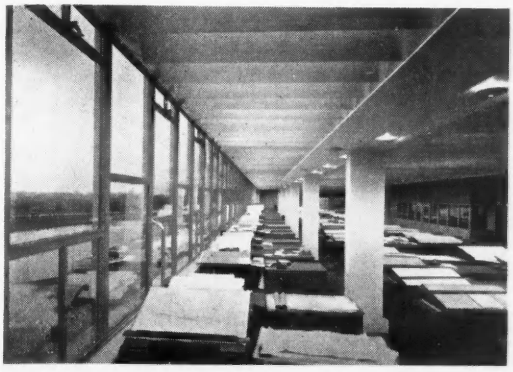
Entrance hall, looking towards drawing office corridor and the tiled mural. Below are shown the frameless armour plate entrance doors. These have specially designed handles in walnut with stainless steel cog wheel.



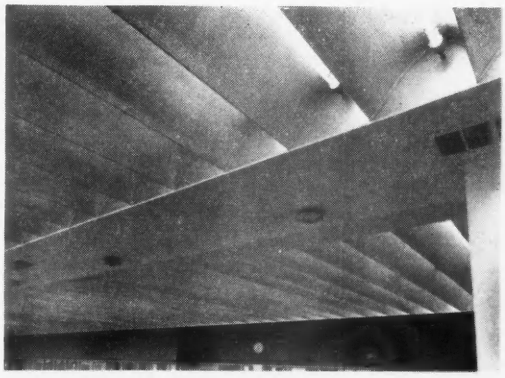
Sub-contractors and suppliers were:

Heating engineers, Rosser and Russell, Ltd.; panel heating specialists, Frenger Ceilings, electrical specialists, General Electric Co., Ltd.; electrical engineers, Barlow and Young, Ltd.; lift makers, Aldous and Campbell, Ltd.; metal windows, Crittall Manufacturing Co., Ltd.; plumbing contractors, Robert Davidson; partitioning specialists, Sankey Sheldon, Ltd.; precast concrete specialists, Vitreous Concrete Co., Leicester; masonry constructors, Bath and Portland Stone Firms, Ltd., Bath; insulation specialists, Cork Insulation and Asbestos Co., Ltd.; furnishing contractors, Russell Furnishing Co., Ltd.; flooring specialists, The Marley Tile Co., Sevenoaks, Kent; roofing, etc., specialists, Ruberoid Co., Ltd.; joinery specialists, Saro Laminated Wood Products, Ltd., Folly Works, Whippingham; precast concrete specialists, Atlas Stone Co., Lower Sherne, Kent.

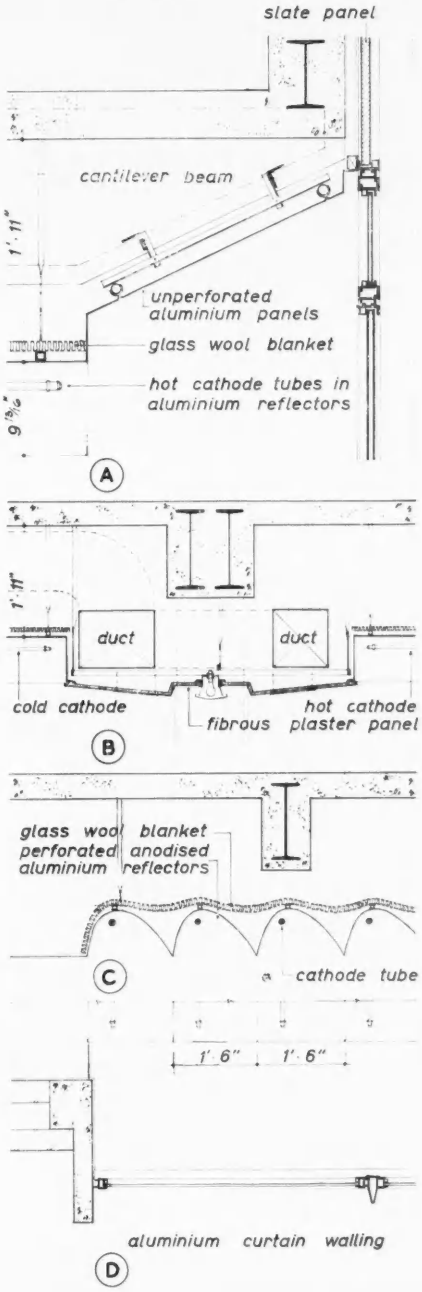
Facing brick manufacturers, G. Tucker and Sons, Ltd., Loughborough; sanitary equipment manufacturers, John Bolding and Sons, Ltd.; slate manufacturers, Bow Slate and Enamel Co.; ironmongery suppliers, Yannedis and Co., Ltd.; structural engineers, Boulton and Paul, Ltd., Norwich; glazing contractors, Robinson and British Challenge Glazing Co., Ltd.; joinery manufacturers, Knowles Woodworking, Ltd., Rotherham; architects' specialists, General Constructional Engineering Co., Ltd.; terrazzo workers, Art Pavements and Decorations, Ltd.; catering equipment suppliers, J. Stott and Co., Ltd., Oldham; suspended ceiling specialists, Anderson Construction Co.; architectural decorators, G. J. Green; folding and sliding doors and windows, Esavian, Ltd.; permanent wall decoration, Robb's Cement and Enamel Finishes, Ltd.; shop fitters, Fredk. Sage and Co., Ltd.; operating services, Telephone Rentals, Ltd.; paint manufacturers, The United Paint Co.; and marble, etc., specialists, J. Whitehead and Sons, Ltd.

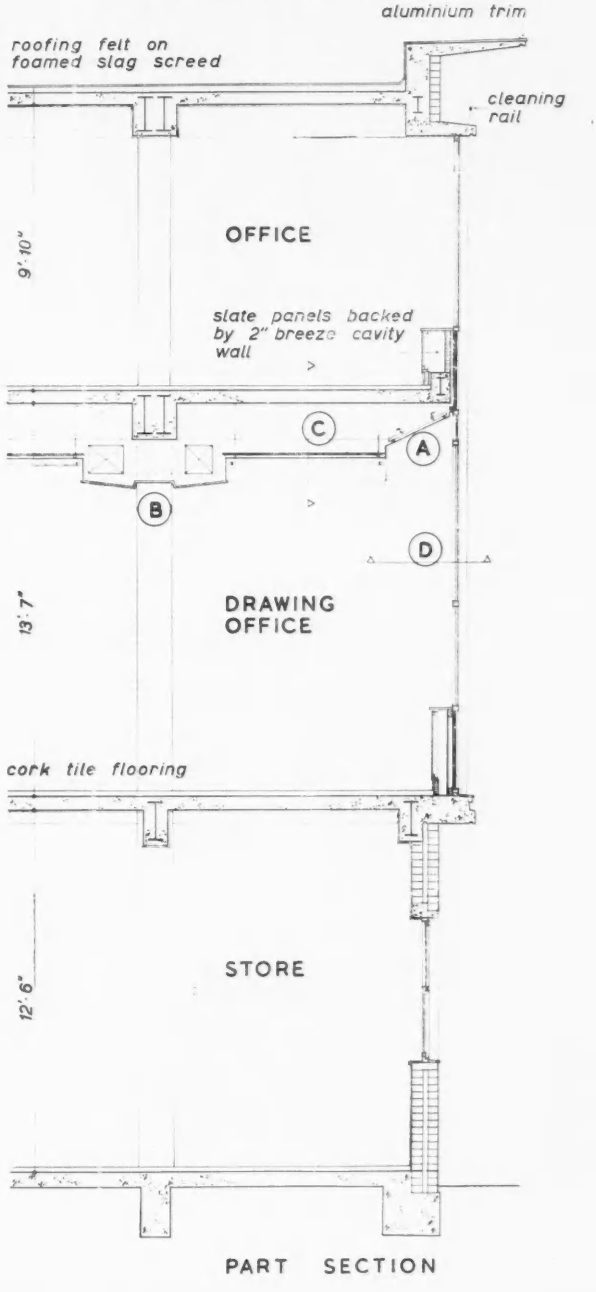


The drawing office.

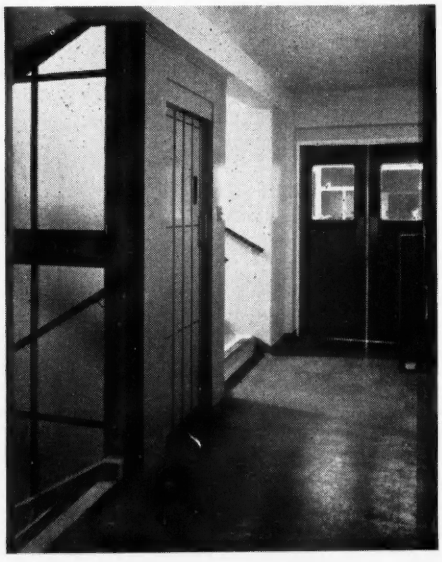


Drawing office lighting system.



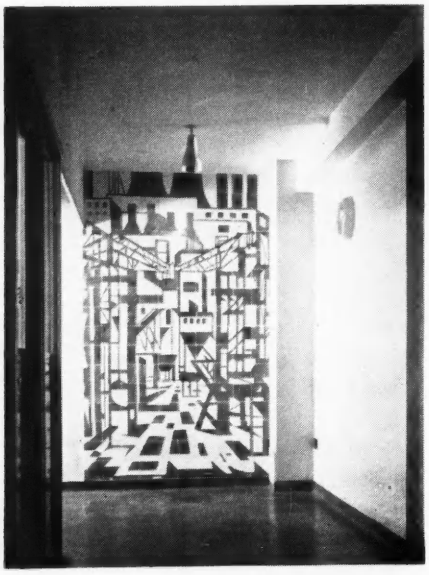


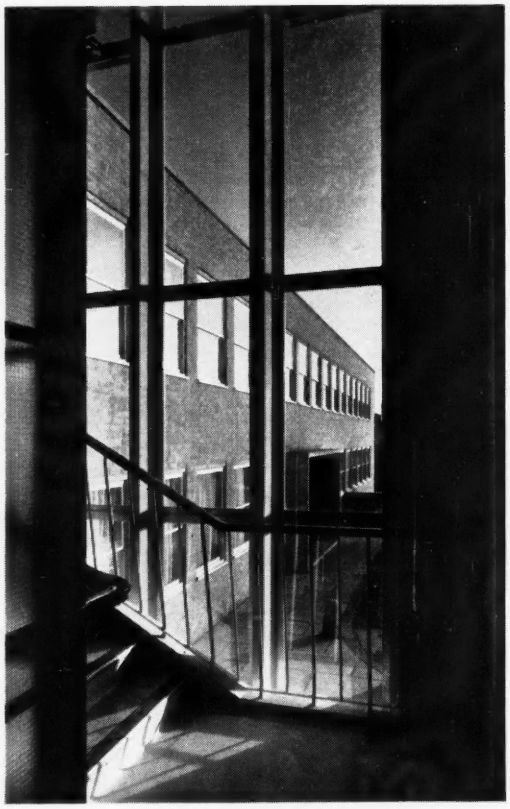
Board room ; panelling and furniture are in black bean, designed by the architects.



Lift enclosure in wired glass with pressed metal surround to gates. Floors are in cork.

Standard steel partitions are used to subdivide the second floor. Below is a detail of the tiled mural by Nicholas Vergette, an abstract pattern showing products made by the clients.





Looking through the main staircase window, towards the main entrance.

NEW OFFICES, PETERBOROUGH

GLENROTHES NEW TOWN, FIFE

Shopping Precinct, Woodside Way

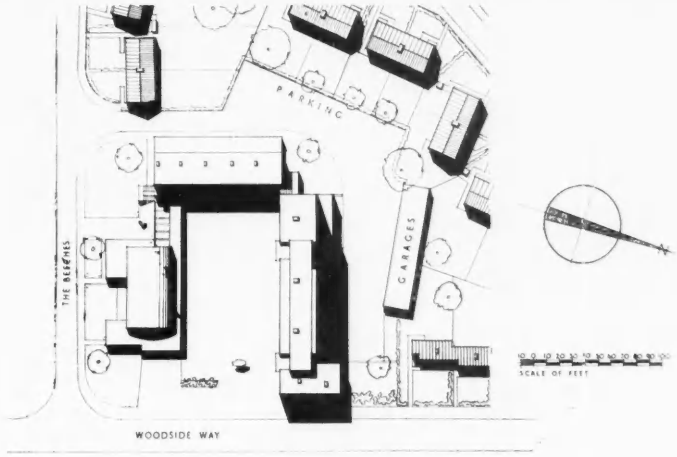
PETER TINTO, ARIBA, AMTPI, Chief Architect and Planning Officer

H. A. WHEELER, DA(Glas.), ARIBA, Architect-in-Charge

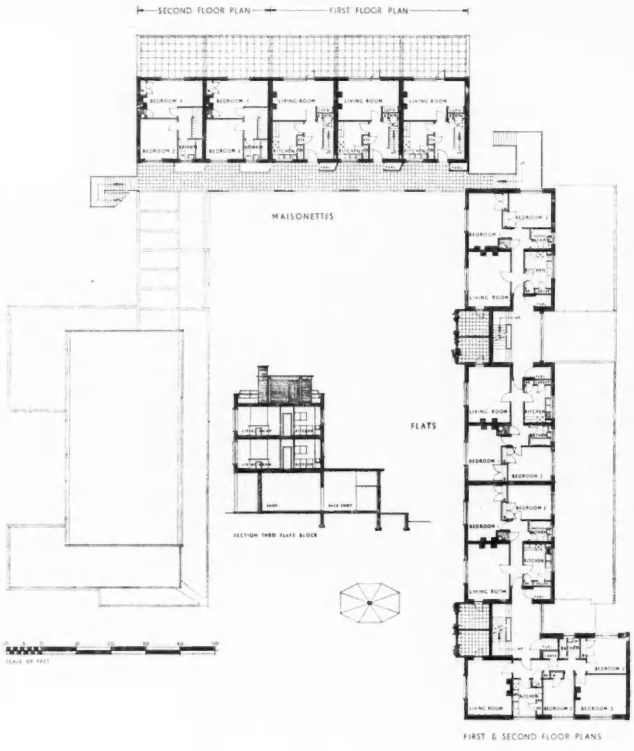
W. H. DINSMORE & SONS, FFS, Quantity Surveyors

GEORGE DAVIE, CRAWFORD & PARTNERS, Consulting Engineers

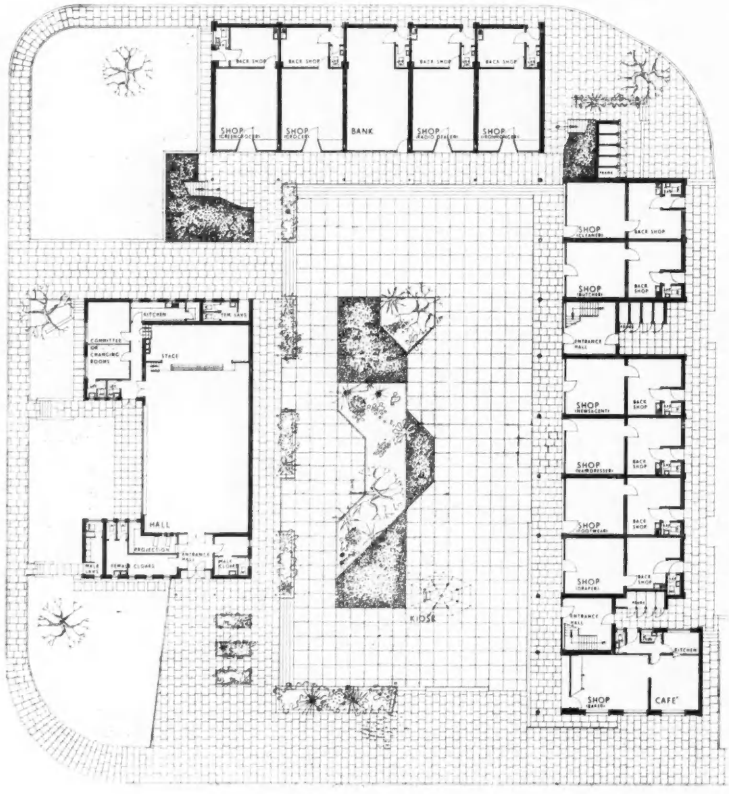
Community centre and, right, shops with flats over.



LAYOUT PLAN



FIRST & SECOND FLOOR PLANS

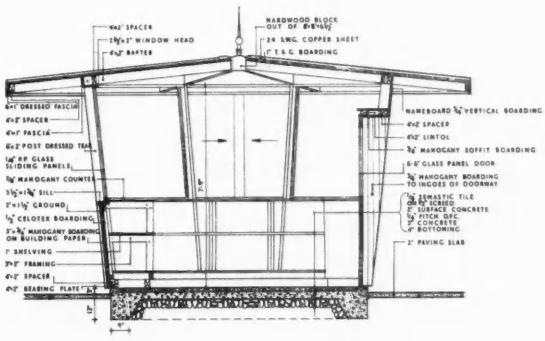


WOODSIDE Residential Precinct when complete will contain about 1,200 houses, of which the greater part are now occupied. The precinct has two groups of shops of which the second (the subject of this article) occupies a prominent position on Woodside Way, which forms part of the main route A.92 from Kirkcaldy to Cupar and Dundee. Known locally as "the second shops," this centre is grouped round a pedestrian square mainly laid out in concrete paving, but also containing shrub and flower beds. Small cobbled areas give a change in texture from the general squared paving. Two sides of the square are taken up with 12 shop units. The types of shops occupying these units are noted on the plan. The third side is occupied by the community hall, planned to seat about 240.

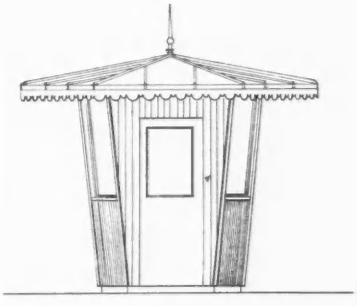
There are five maisonettes and eight flats above the shops, and it is interesting to note that these are much in demand although the rents are somewhat higher than the flats in the surrounding areas. It appears that many people appreciate the urban feeling of this little group and enjoy the life in it at most times of the day. It is noted that several of the people in the first-floor flats sit by their windows in the evenings with the lights on, but without drawing their curtains, as if taking part in the liveliness of the square and reluctant to shut it out.

Of interest is the concrete shell construction of the community hall roof. The 3 in. reinforced concrete barrel vault roof is supported at each corner by an rc column. Elsewhere the 5-in. rc roof slabs are supported on 11-in. cavity brick walls finished externally either in "Dunbrik" concrete facing bricks or by dry-cast Derbyshire Spar. The walls are plastered internally. The shell concrete roof is insulated below the mineral-finish roofing felt with $\frac{1}{2}$-in. insulating fibreboard and treated internally with Vermiculite plaster. The shell roof, apart from having an interesting shape, was particularly useful in this case because it gave a high ceiling inside the hall while retaining as low a roof as possible outside. If the hall had had a high-pitched roof, the general effect of the whole group would have been spoiled. Heating of the hall is by automatic gas-fired central heating boiler, with radiators behind flush grilles in the walls. Extract electric fans have also been installed for forced ventilation during dance sessions, which are very popular, the

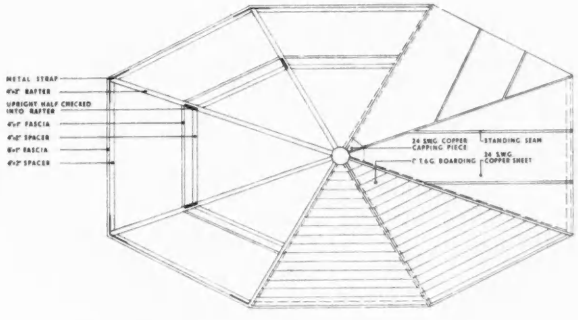
Shopping precinct from SE corner of the court. To the right is the kiosk, details of which are shown below.



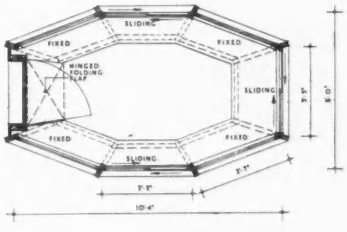
SECTION



ELEVATION



ROOF PLAN



PLAN AT COUNTER LEVEL

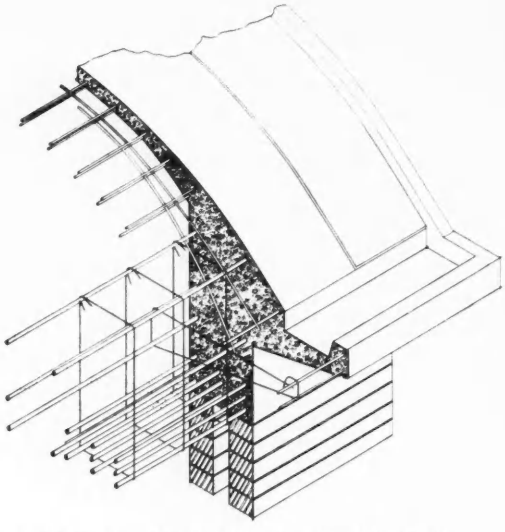
SCALE OF FEET

DETAILS OF KIOSK

Shopping precinct, from SW of courtyard.

young people being drawn from considerable distances in the surrounding countryside. They seem to like the fresh appearance of the hall.

The contract figures for the various parts of the group were as follows: (1) Community hall, £12,225; (2) block of shops with eight flats over, £34,535; (3) block of shops with five maisonettes over, £19,118; (4) lock-ups, £2,452; (5) kiosk, £365; and (6) preliminary works and site works, scaffolding, etc., £10,462. Landscaping was carried out by the Corporation's Estates Department to the designs of the Chief Architect and Planning Officer.



ISOMETRIC SHOWING CONSTRUCTION OF SHELL CONCRETE ROOF AT WALLHEAD OF COMMUNITY HALL

Interior of community centre.

Following is a list of contractors engaged in the work:

Brick and concrete work, Whatlings, Ltd., Glasgow; carpenter, etc., A. B. Cant, Dunfermline; glazier, Jas. Thow, Ltd., Ayr; plumber, W. Spittal and Son, Markinch; plaster, cement and roughcast, Morrow and Miller, Glasgow, and Young and Napier, Kirkcaldy; painter work, A. T. Rolland, Dunfermline; electrical work, Associated Electric Services, Leven; heating installation, Underhill Heating Engineers, Ltd., Dundee.

Sub-contractors engaged were:

Felt roofing, Wm. Briggs and Sons, Ltd., Dundee; metal windows, Crittall Manufacturing Co., Ltd., Glasgow; wrought iron work, Aitken and Allen (Engineers), Ltd., Edinburgh; fireplace slabs and grates, T. and J. W. Neilson, Ltd., Edinburgh; terrazzo, Toffolo, Jackson and Co., Ltd., Glasgow; Accotile flooring, Neuchatel Asphalte Co., Ltd., Edinburgh; ironmongery, Parker, Winder and Achurch, Ltd., Birmingham; and timber flooring (in hall), Dundee Flooring Co., Ltd., Dundee. Chairs in hall are Pel nesting chairs supplied by T. M. Sparks and Son, Ltd., Dundee, and curtains supplied by Findlater Smith, Edinburgh, and hung by Matthew Spears and Co., Kirkcaldy.

SHOPPING PRECINCT, GLENROTHES

Notre Dame de France, Leicester Place, London, WC2

CORFIATO, THOMSON & PARTNERS, Architects
BARLOW, LESLIE & PARTNERS; COLLINS & MASON, Consultants
SARJEANT, STIMPSON & PARTNERS, Quantity Surveyors
C. P. ROBERTS & CO., LTD., Builders

Detail of entrance from Leicester-place.

General view of Leicester-place front. Below : Approach stairs to narthex.

THIS church has been rebuilt on an earlier foundation which was built by a French architect named Boileau in 1867. The original scheme was sponsored by Cardinal Wiseman and his successor Cardinal Manning, with the active co-operation of Father Faure, a Marist. The earlier church was built on a cruciform plan within the circular walls of a panorama which was founded in 1789 by a Scottish painter named Barker. Boileau's church was in the cast-iron Gothic style.

The new church, designed by Messrs. Corfiato, Thomson and Partners, had again to be within the original circular walls, and in order to give a more spacious effect and increased accommodation the church has been built as a rotunda. One of the conditions of the reconstruction was that classical columns should be introduced, and the architects' intention was to give as much of a modern touch as conditions permitted.

The entrance front to Leicester-place is admirably handled, the re-entrant curve giving a sense of invitation and preparation for the circular plan of the interior. The returns of the projection screen the entrance, and also the service entrance to the presbytery above the entrance vestibule. The external sculpture is well placed, modern in treatment and curiously recalling early Norman-Romanesque work at Kilpeck and Shobden.

The interior gives a fine effect of spaciousness, in treatment a compromise between Classic and "modern." The inevitable distortion of an arcade springing from square capitals on a circular plan has been well managed, and distortion is not apparent. The gallery front, rather low down between the columns, might have given a depressing effect but this has been cleverly avoided by the use of reverse curves which shorten the apparent length of frontage and give a suggestion of self-support.

The interior design presents a luminous disc in the form of a glazed eye supported by a coffered ceiling, the mouldings of which were designed to receive the concealed artificial lighting. The columns are of Bath stone and the floor of black polished Ashburton marble. The main altar is of Portland stone. The side altar for the Holy Virgin's Chapel is of inlaid mosaics designed by Boris Anrep.

The tapestry representing the Holy Virgin amidst the creation was designed by Dom Robert of Buckfast Abbey, Devon, and was carried out at Aubusson, being on loan offered by the French Government. The entrance vestibule is at two levels with a flight of steps so designed in order to permit the building of a circular hall underneath the main body of the church. One of the walls has representations of the coats-of-arms of the Pope and Cardinal Griffin, carried out in sgraffito by Augustus Lunn.

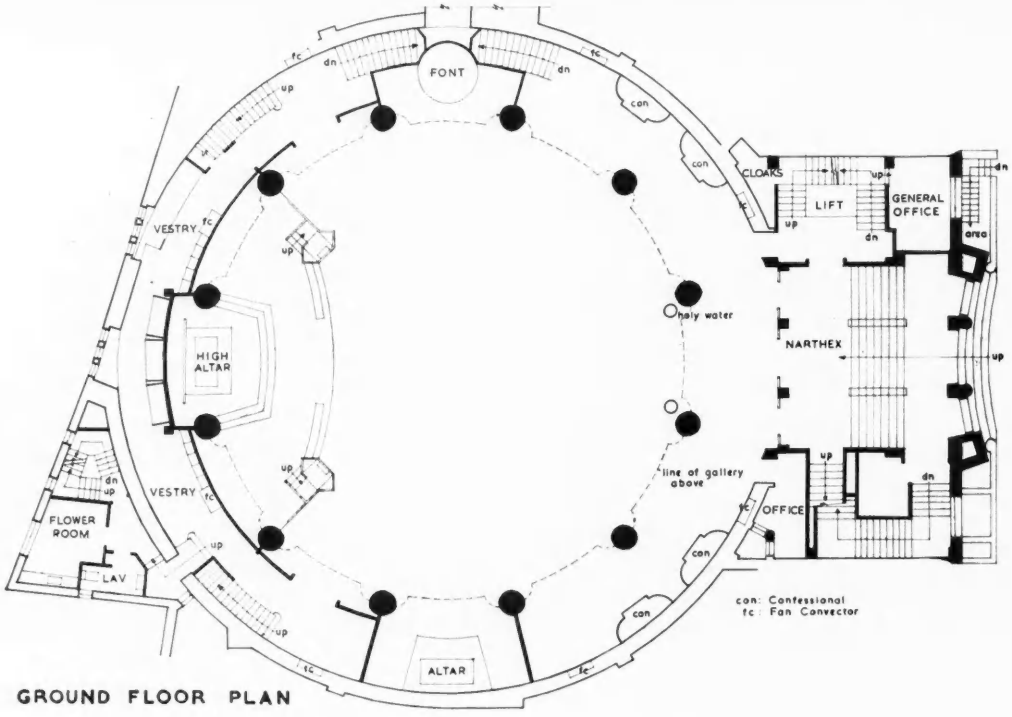
The walls are in 2-in. Stamford facing bricks, with central portion in Portland stone. The statue of the Holy Virgin has been drawn by the architects and carved by Professor Saupique, of Paris. This again has been a presentation by the French Government. The high reliefs on the two entrance pillars represent scenes from the life of the Holy Virgin and were carved freehand by pupils of Professor Saupique.

Sub-contractors and suppliers were:

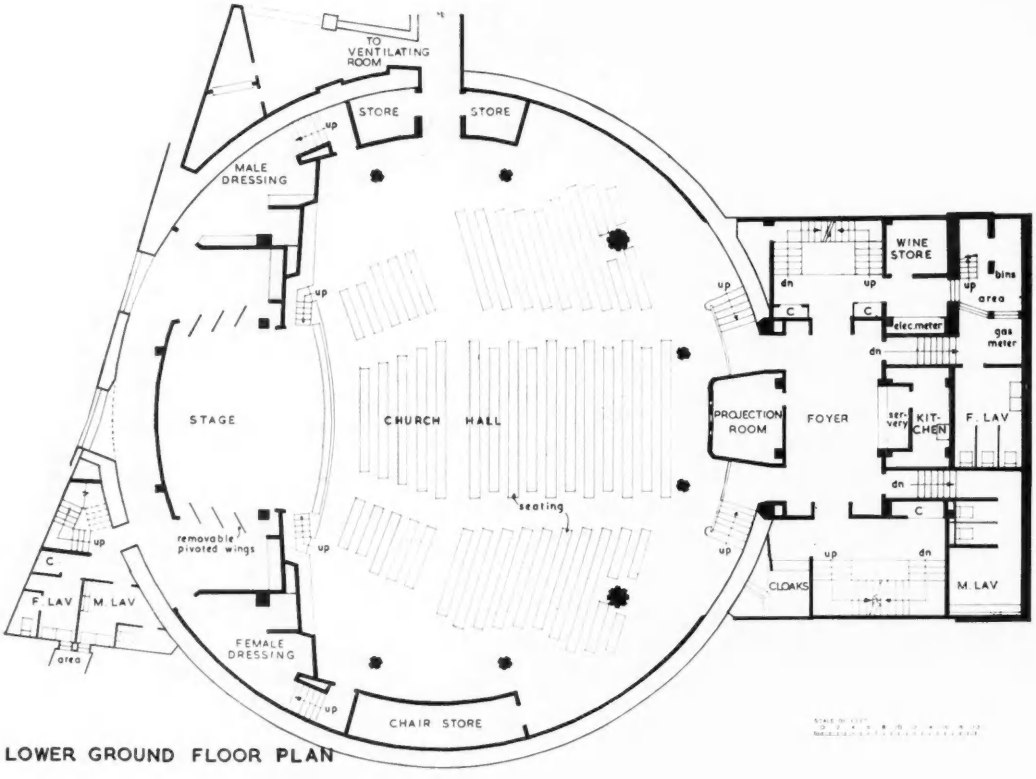
The Aston Construction Co., Ltd., steelwork; Bath and Portland Stone Firms, Ltd., stonework; A. C. Bayes and Sons, Ltd., altar fabric decorations; John Bolding and Sons, Ltd., sanitary fittings; Caxton Floors, Ltd., floors; J. Goor, sculpture in cement; James Hetley and Co., Ltd., sand blasted lay light panels; Haskins-Ironwork, Bostwick gates; Hammond and Champness, Ltd., electric lift; Walter W. Jenkins and Co., Ltd., marble floor and stone facings; A. Lunn, Sgraffito work; Limmer and Trinidad Lake Asphalt Co., Ltd., asphalt tanking and roofing; H. H. Martyn and Co., Ltd., fibrous plasterwork and lay lights; Gordon Pemble, side altar mural decoration; Rosser and Russell, Ltd., heating; W. B. Simpson and Sons, Ltd., floor tiling and terrazzo paving; Steel Bracketing and Lathing, Ltd., suspended ceilings; Thorpe and Thorpe, Ltd., electrical installation; Walker Symondson, Ltd., pews and altar furniture; H. Warren Wilson, Ltd., design of sand blast panels; Geo. Wright (London), Ltd., metal balustrades and hand railing; J. W. Walker and Sons, Ltd., organ; and Yannedis and Co., Ltd., ironmongery.

Photograph: Sydney Newbery

VIEW OF HIGH ALTAR FROM BALCONY

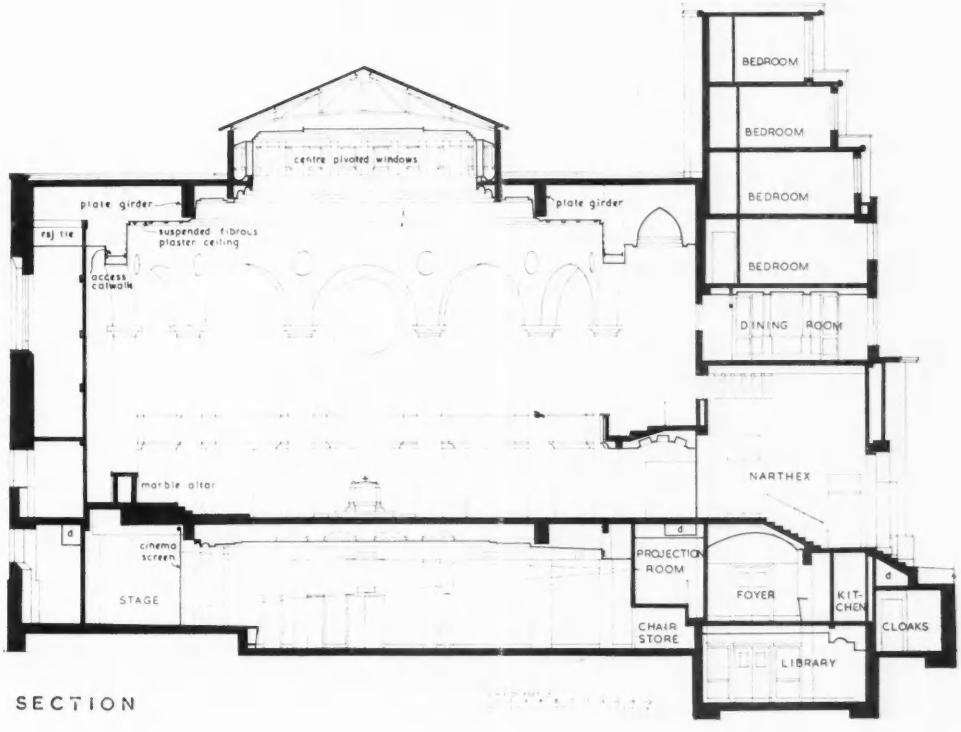


GROUND FLOOR PLAN



LOWER GROUND FLOOR PLAN

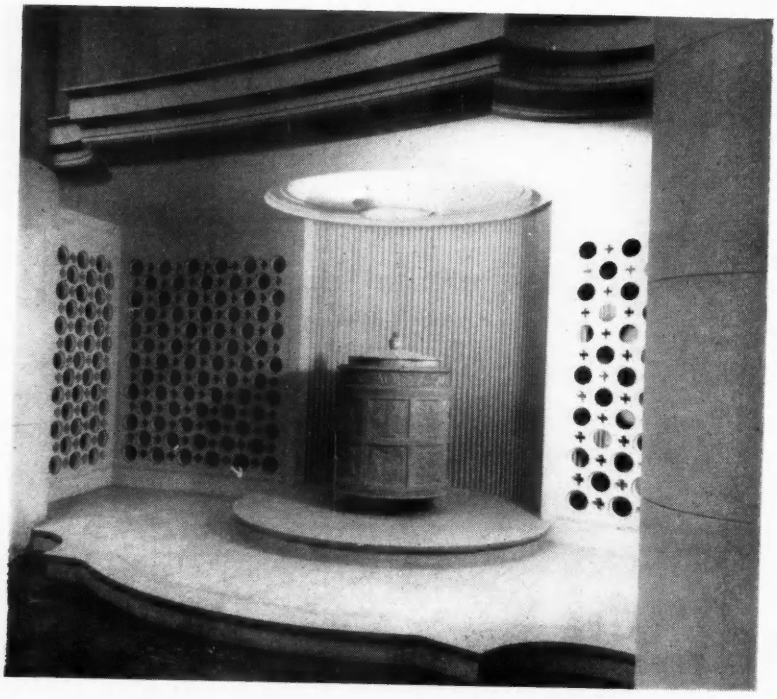
View of east end from balcony.



SECTION

View from ambulatory of roof.

NOTRE DAME DE FRANCE, LEICESTER PLACE



Detail of font.

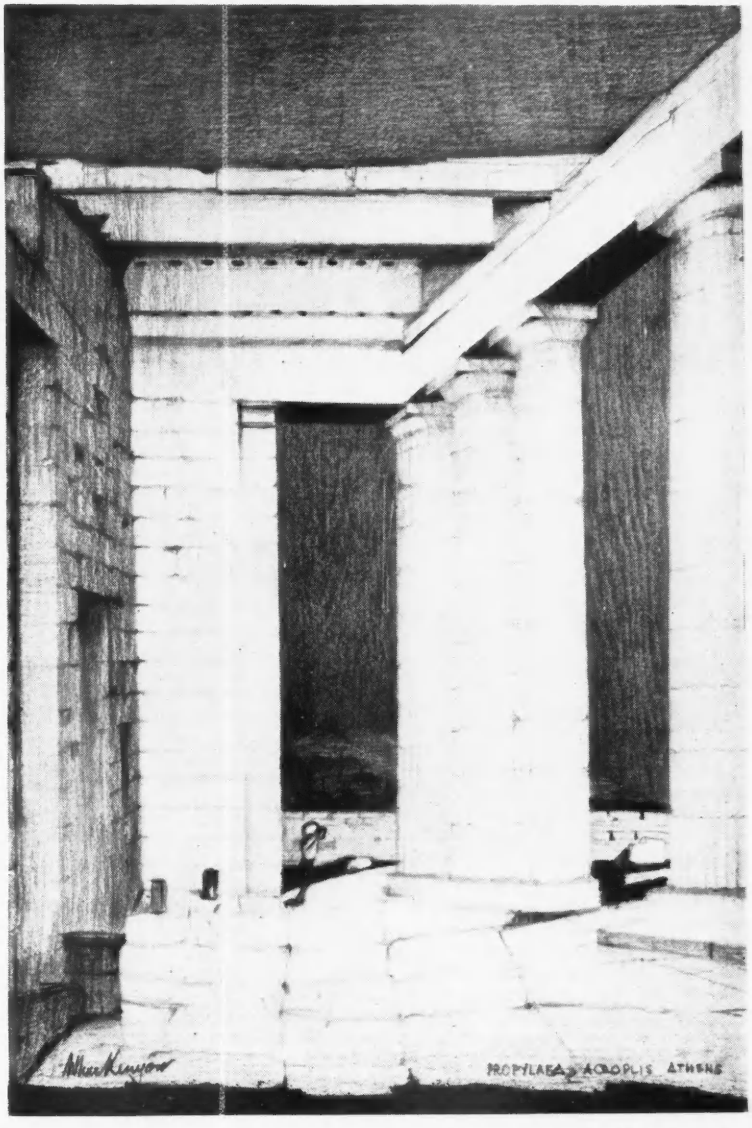
GREECE

The Ancient & the Modern

By ARTHUR KENYON

With Sketches by the Author

GREECE is not just a land flowing with antiquity. Its towns are modern, its villages are often entirely rebuilt owing to devastation from earthquakes, and it is carrying on with the everyday things of life. There are times when, sitting amongst the ruins of the fourth and fifth centuries BC and earlier, one can imagine oneself living with the people of those wonderful ages; but as soon as one leaves these isolated spots—and they are very isolated—one is back again in modern Greece with its miles of olive groves, enormous vineyards yielding some of the finest dessert grapes imaginable, orange and lemon trees, golden firs and small and stately cypress trees. The country is mountainous and very beautiful, ranging from the wild, rocky mountains to the soft fertile valleys. Distances are great and the roads are rough, except near the towns. In travelling about the country one does not feel any sense of antiquity, yet it is here that the early Greek culture was founded in the great citadels, where we learn of early history by facts, by legends or by writings, and it is these few remaining unearthings of the past which have made Greece so rich in the greatest works of all ages.



Touring the Hard Way

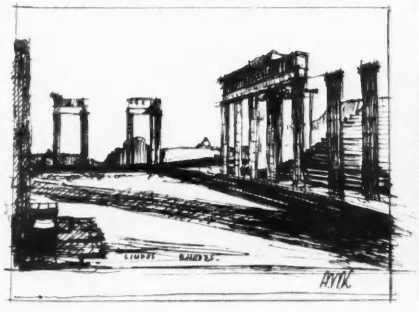
It is this Past which takes the tourist as well as the archaeologist to Greece—a Greece not yet ready to receive them. The tourist trade which, owing to the wonderful climate, extends over nine months of the year, has outpaced the available accommodation, and there are times when personal comfort has to be sacrificed. The hotels are mostly second-class, without modern conveniences, and most of them do not serve meals. The boats serving the islands are old and out of date, and if the tourist trade should continue to increase, more accommodation will have to be provided. The average tourist, whose general desire is to see the ancient monuments and to study the ancient history, is not looking for luxury, but as travel is vast and exhaustive, simple comforts are necessary. The Tourist Associations in Greece are beginning to realise this, and there are many charming hostels growing up in the country districts, simply but very efficiently designed, and giving just the service and accommodation required at very moderate prices.

Modern Athens

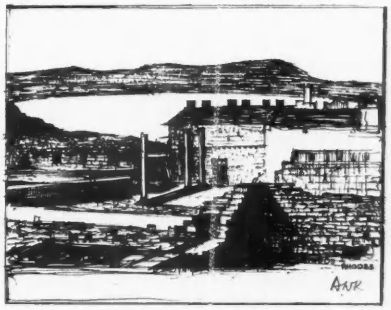
A tour of Greece naturally starts with ATHENS, and one must face the fact that this is a modern city. It has good thoroughfares and some good Renaissance buildings, one or two first-class hotels and many second- or third-class hotels, several good restaurants and numerous outdoor cafés. After all, the Greeks live out of doors. The climate is so kind that nobody wishes to take meals inside. Meals are taken late, as in most southern countries. The shops close at 1 o'clock and open again at 5 p.m. Lunch is from 1 to 2 p.m., and dinner 8 to 9 p.m., and the streets are busy and the cafés open well after midnight.

There is an old part of Athens, but this is not very extensive, nor is it particularly attractive. There are one or two very old and very small Byzantine churches, and the little, well-preserved Temple of the Winds—such a precious jewel—all mixed up with the market square with the result that they might easily be missed.

The Acropolis dominates the whole of this area and looks almost insignificant seen from below. Most people see the



Lindos, Rhodes.



Lindos, Rhodes.

Acropolis once on their visit to Greece. See it once with a guide by all means, and then visit it time and time again, for you will never see more perfect beauty than is to be seen here. You can visit all the ancient monuments of Greece and you will come back to the Acropolis of Athens to see the culmination of perfection. Is it the colour of the Pentelicon marble, or the lovely approach through the Propylaea; the beautiful little Ionic Temple of Athena or the perfect proportion of the Erectheum, the grandeur and vigour of the Parthenon or the care which has gone into all the slender details, which makes it all such a masterpiece? One cannot say. It is no doubt all these things and more which wrap enchantment round one's very soul.

The Acropolis seen by moonlight is a thing never to be forgotten. The white marble forms seem to soar to Heaven with grace and dignity, the scars of centuries disappear and the noble structures come to life silhouetted against the background of the deepest blue sky, giving a feeling of Eternity.

Around Athens

There are many places to visit from Athens and many weeks could be spent without exhausting them, but a short description of some of them might give an idea of what there is to see.

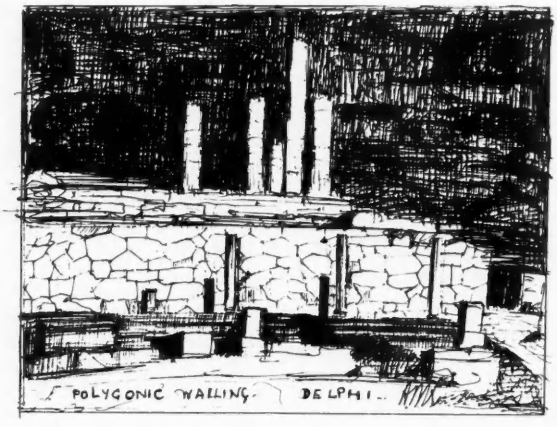
PIRAEUS is the Port of Athens, and although it is some ten miles away it almost merges with the city. Cargo and passenger liners call here and it has become a very busy port with shipping offices, narrow streets, bazaars and many cafés. In the evening it is gay with the brightly lighted harbour and open-air restaurants.

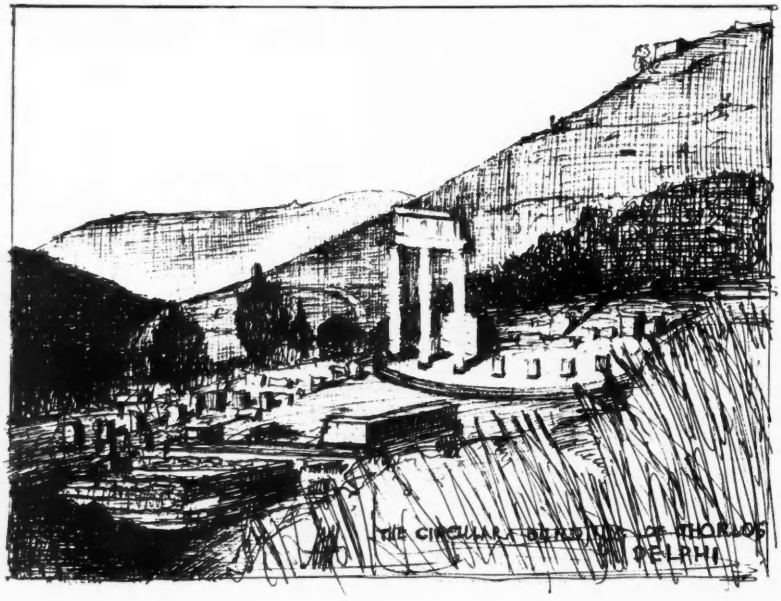
The island of AEGINA, about one hour by boat from Piraeus, is very charming. Aegina, the capital, has the remains of the Temple of Aphrodite, built in the fifth century BC. The island is famous for pottery and ceramics.

SUNION, the southernmost point of the mainland, is reached by road through well cultivated country with vines and olive groves and deep red soil. On the top of a hill looking out to sea are the remains of the rugged Temple of Poseidon dedicated to Neptune; this majestic temple stands sentinel at the entrance to the Saronic Gulf. It is at these remains that Lord Byron set the bad example of carving his name with hammer and chisel on one of the stones: hundreds of others have now added their names, and this is the only place where such vandalism appears to have occurred, as all other historical monuments seen throughout Greece are properly respected.

At DAPHNE, a little way out from Athens, is the famous small Byzantine Church of the 11th century whose beautiful mosaics are said to rank amongst the finest in the world. The road from Daphne towards Corinth passes along the ancient Sacred Way, where once statues lined the road to Eleusis. There is a pilgrimage twice a year from Athens to Eleusis.

In one of the hillsides on the way to Mycenae is the Sanctuary of Asclepius in which lies the famous Epidauros theatre with perfect acoustics. The theatre holds 14,500 people and classical plays and opera are still held here each year.





Mycenae

MYCENAE, situated in the Argive hills, is the centre of a civilization which reached its height between the 17th and 14th centuries BC. It is due to the treasures discovered by the excavations which were carried out in the face of ridicule by the famous archaeologist, Schliemann, from 1876, that what was at one time considered to be purely mythical has become a reality. One passes through the famous Lion Gate of the 14th century BC into the great fortifications where stand the Acropolis, Court Houses and Royal Palace. Down from the Acropolis are the beehive tombs, the most famous of which is known as the Treasury of Atreus, or Agamemnon's tomb. It is 50 ft. wide and about the same height. The chamber is shaped like a beehive with overlapping neatly-fitted stones. The passage to this tomb, built of huge stones, is wonderfully preserved, and the entrance doorway, 18 ft. high, is surmounted with one lintol stone weighing 120 tons. One wonders why such a stone was put there and how it got into position, but there it remains over the ages.

OLYMPIA, situated at the foot of Mount Kronos on the River Alpheus, was not a town but a collection of temples and treasure houses and a stadium. The year 776 BC is officially accepted as that of the first Olympiads, and every four years up to AD 393 these games were held. They were participated in by all nations in the Greek world, and whatever wars or disturbances were taking place, Olympia became neutral territory and a truce was observed at the Games. The stadium is not completely excavated, but it is sufficient to show the starting and finishing lines. The raised tiers held 50,000 people.

DELPHI is situated in the most magnificent mountain country. What a wonderful setting for the variety of architectural monuments it contains ! It became a great religious centre and people from over the entire Greek world came to consult the Oracle under the priestess Pythia. Apollo, who was highly esteemed here, became the God of Parnassus and conducted the oracle under the name of Apollo Pythia. The Temple of Apollo has its foundations in good condition, and there are many tall Doric columns standing. Below the main temple is the little Doric temple of Athena, once the Athenian Treasury, and there is a well-preserved theatre built in the 4th century BC and restored by the Romans; here is the spring at which the priestess drank before consulting the Oracle. Higher up the ancient town is the stadium, whilst lower down one passes the Castalian fountain gushing with water to the Sanctuary of Athena Pronaea, with the lovely circular building, the Tholos, which has several columns still standing. The whole is situated amongst pines and olives.

Rhodes

Of the many islands which can be visited in the Dodecanese, RHODES is one which should be seen. The harbour front is surrounded by stone buildings of the medieval period, and the new buildings in the town have been kept in harmony in the materials used. Although the buildings are quite simple in treatment, stone has been very liberally used. The stone is of a soft golden-brown colour, a relief from the poor concrete and stucco finishes seen elsewhere in new buildings in Greece. The waterfront has been well laid out with spacious gardens, beautifully maintained. The entrance floors are usually raised above the ground, and the staircase approaches are exceptionally well treated in wide flights of stairs. The modern hotels, of which there are several, are simply designed, and generally the architecture appears to be under proper supervision. The forecourts are beautifully paved in large and well-designed patterns made up of black and white pebbles which we should rejoice in if we could get such work done in this country. But alas ! it requires more patience than we possess.

It was here that the Apostle St. Paul preached. The history of Rhodes goes back to 1500 BC and earlier, and the island has gone through many occupations. The famous Colossus of Rhodes, one of the Seven Wonders of the World, was built to commemorate the successful resistance of the siege by Demetrius. It is reputed to have stood 105 ft. high and to have fallen into the sea during an earthquake. In the year 1310 the Knights of St. John of Jerusalem arrived and remained there for two centuries, and the great fortress-palaces and other buildings show a wonderful example of their architecture in a most excellent state of preservation.

Cretan Visit

CRETE is one of the largest islands south of Greece and contains some of the earliest examples of civilisation. Knossos is world-famous for the restoration of the Palace and its surroundings. Excavations have been taking place over many years, and the results are indeed astonishing and give a wonderful insight into the life of the people in these very early times. There was a settlement on Crete 5,000 years ago, and about 2000 BC it was the centre of the history of the western world. In the Middle Minoan Age the palaces were destroyed by earthquakes, but were rebuilt in 1500 BC in even greater splendour.

Phaestos, which is situated on the south of the island, is almost as important as Knossos. The approach to it is through central Crete, by way of high mountains and extensively cultivated valleys and plain, rich in olives and vines. Rice and cotton are also quite extensively grown. The Palace of Phaestos is magnificently situated and commands most extensive views of the valley below. The remains are indeed very remarkable and consist, as in Knossos, of royal apartments, temples, state rooms, whilst lower down from these apartments, approached by a wonderfully preserved staircase, is a magnificent theatre, also in excellent preservation.

The museums of Greece show an important part of its history, and it becomes quite wearying to go over them, although very necessary as so many of the more precious discoveries have been placed in them. Most of the ancient places, therefore, have museums attached to them. Unfortunately, the one on the site of the Acropolis in Athens is not yet open to the public.

The museums in Athens should certainly be visited. The National Archaeological Museum contains very fine examples of archaeological specimens from all parts of Greece, whilst the Byzantine Museum has examples of Byzantine art and architecture very charmingly displayed. This latter is an extremely interesting small museum and is well worth seeing. The Benaki Museum has a wonderful collection of costumes very well set out, also ceramics and other works of art.

Time is required to see all the monuments of this ancient country of Greece. A quick tour of two or three weeks is only sufficient to get a fleeting glance of many of the places, and one finds oneself being rushed away from places where one should rest and dwell amongst the ruins to contemplate the Past. One should not worry, therefore, if many places are missed, provided those which are seen are seen with sufficient time for study.

WIT and WISDOM of 1955

THE speech by SIR WINSTON CHURCHILL made to the NFBTE provided material for the first example of wit and wisdom as recorded in our columns last year. He said " *It is not easy to see how anything short of a world crash can deprive the building industry of a prolonged demand for its services, or prevent a constant flow of work in which steadily improving methods will carry with them steadily improving conditions.* 1955 *may be the greatest building year in this century.*"

* * *

In February, in his criticisms of design submitted for RIBA prizes and studentships, MR. RAYMOND ERITH brought some criticism on his own head. An example of his views was: " *When the Vitruvians said that architecture depended on three things, construction, utility and beauty . . . they meant three things, not two. . . . The important point is, that if you neglect or over-emphasise any one of the three basic conditions you will distort the others.*"

* * *

Architects and structural engineers were given a jolt by PROF. FISHER CASSIE, in an RIBA science lecture in April. He declared: " *If one examines most of the structural steelwork of the present day, one finds that it has not progressed far beyond the pillar and beam construction by which the ancient Egyptians produced such enduring results.*"

* * *

Once again, " Spero " is not to be denied his place in this column. Commenting upon Mr. Hope Bagenal's article " The Architecture of Reconciliation," in our issue of May 20, he wrote:

The critic frowned at the design
And gravely shook his head.
" To praise such work I must decline,
It's pitiful ! " he said.
" Those walls of brick ! That roof of tile !
That fenestration formal !
A cornice too ! It makes me smile
The thing is so sub-normal !
Such architecture is a farce,
It's as our fathers built !
Where are the curtain walls of glass?
Where the *pilotis* stilt?
The architects of other climes
Would laugh such work to scorn;
You're hopelessly behind the times,
Your theory outworn ! "
The architect his head let fall,
As smit with sudden pain ;
And then he read Hope Bagenal,
And hope sprang up again.

* * *

In a lecture on rebuilding London to the LMBA in July, PROF. A. E. RICHARDSON, PRA, declared: " *We should awaken to the fact that the London boroughs are ripe for recognition as industrial cities within a vast collective City State.*"

* * *

PROF. NERVI's lecture on concrete and structural form aroused much interest, in October. He summed up his philosophy: " *The outward appearance of a good building cannot, and must not, be anything but the visible expression of an efficient structural or constructional reality.*"

* * *

The year concluded with MR. H. S. GOODHART-RENDEL'S " Architectural Memories, 1905-1955," in which he declared his " *personal detestation of anything that can reasonably be described as 'quaint' and you must therefore expect from me no admiration for the new Mickey Mouse work of Le Corbusier. . . .*"

Charles Dickens Secondary Modern School, Broadstairs

WOODROFFE, BUCHANAN & COULTER, FF.RIBA, Architects
in association with E. T. ASHLEY SMITH, FRIBA, Kent County Architect

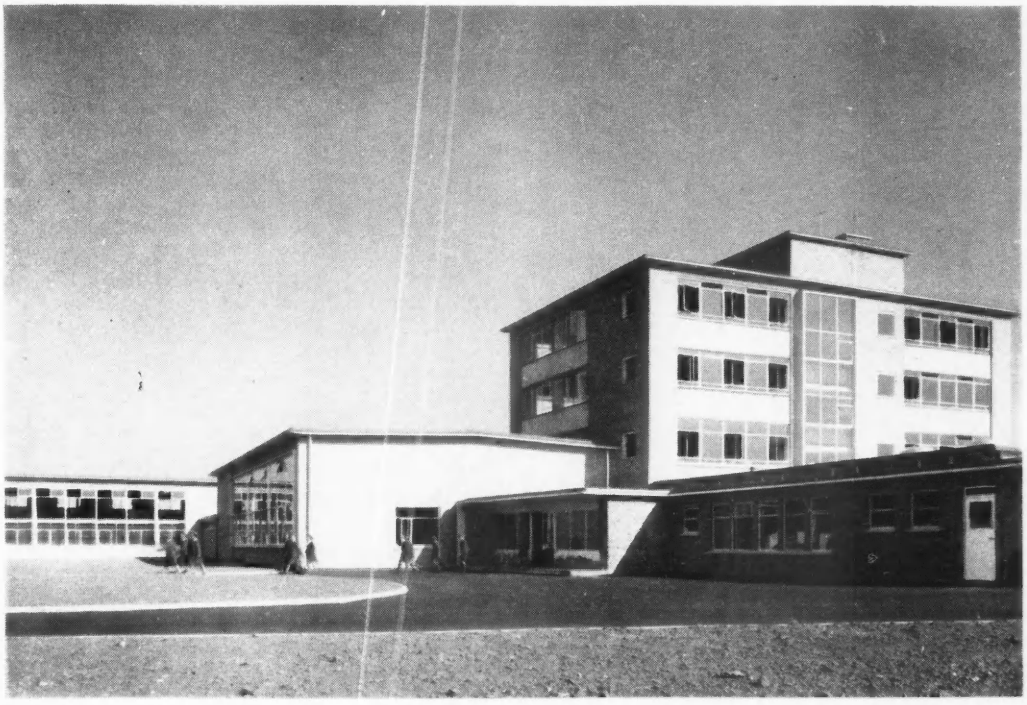
SCOTT & WILSON, Consulting Engineers for Structure

G. H. BUCKLE & PARTNERS, Consulting Engineers for Heating and Electrical

RIDER, HUNT & PARTNERS, Quantity Surveyors

W. W. MARTIN (Thanet), LTD. Builders

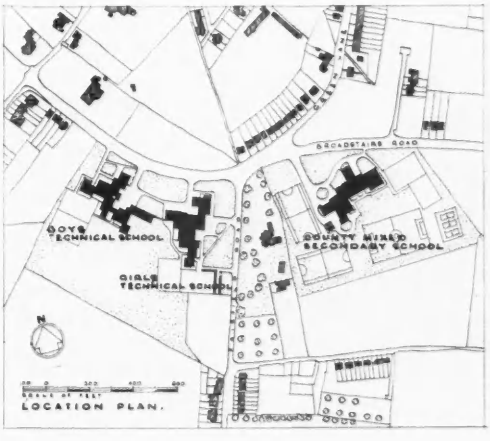
Assembly hall and main entrance.



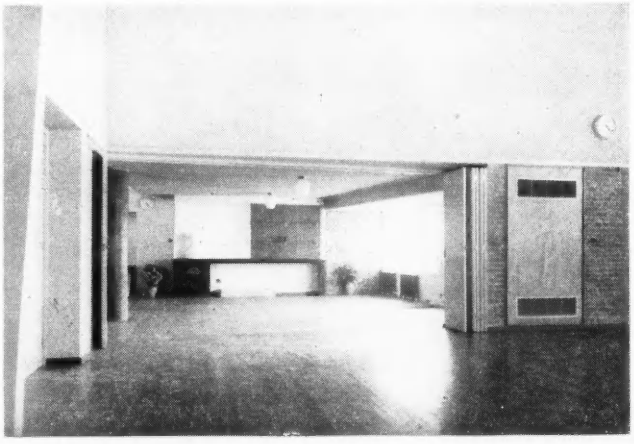
OPENED on September 12 last, this is the first post-war secondary modern school in Thanet, and provides for three-form entry, plus one classroom. The school is planned to the north side of a ten-acre site on the main approach road to Broadstairs from London. On adjoining frontage land a boys' and a girls' secondary technical school will be built in the 1955-57 programmes. The site plan also shows these schools.

The Charles Dickens School is planned broadly in an east-west direction, fairly close to the main road and with playing fields to the south. At the west end is the main entrance, backed by a four-storey classroom block containing library at ground floor and 12 classrooms above. The entrance hall is also a dining space, and sliding and folding doors open this space up to the assembly hall. The administration section is adjacent to, and below, the four-storey classroom block. The assembly hall has a stage backing on to the gymnasium changing rooms which can also be used for dressing rooms. The gymnasium and changing unit can be used for outside school purposes with access separate from the school. At the east end, the special subjects block provides four workrooms on the ground floor and four at first-floor level.

Seen above is the main entrance, with assembly hall beyond. To the right is the four-storey classroom block, which has the library at ground floor and 12 classrooms above. Below is the location plan showing the eventual layout when technical secondary schools for boys and girls are built.



On this page are seen the entrance hall as seen from assembly hall. At foot is the main entrance. Knapped flints have been used for the flanking walls.

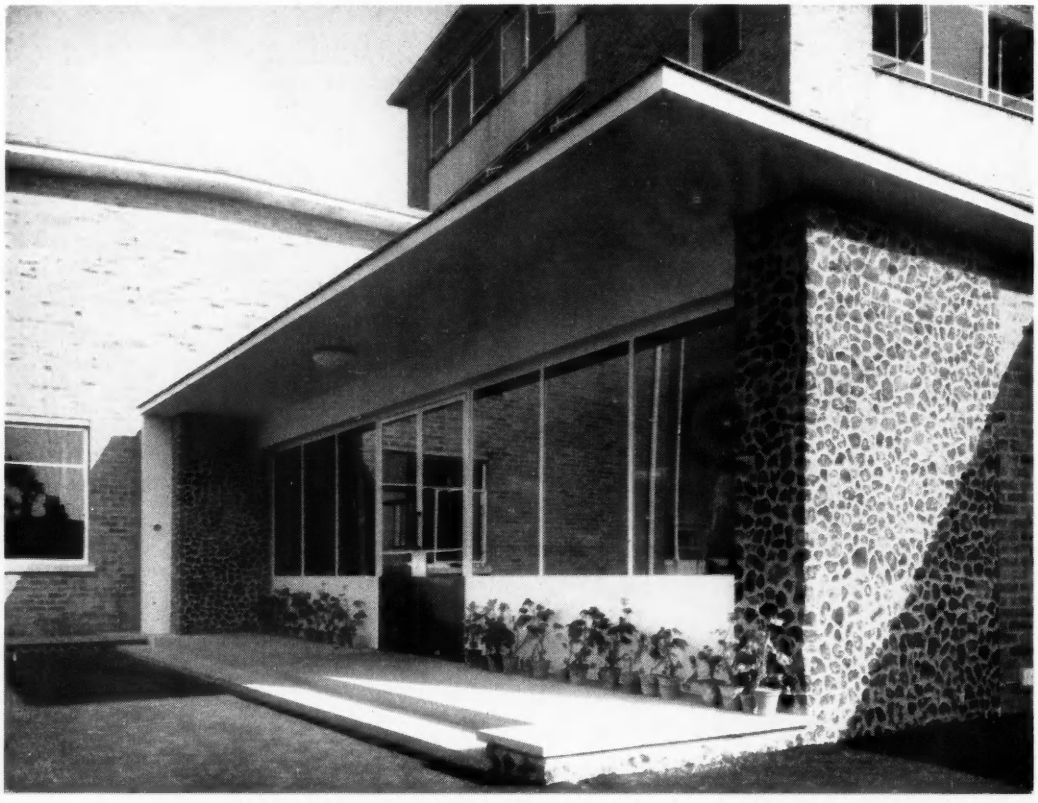


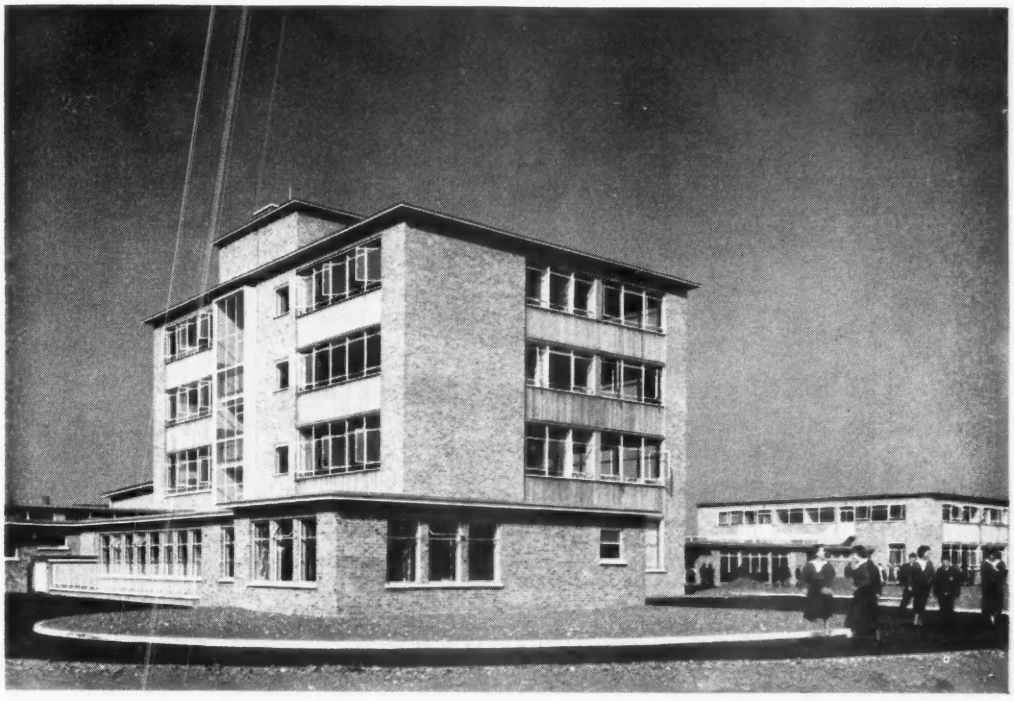
The percentage areas are as follow:

	Percentage
Teaching area	55.05
Teaching storage	4.50
Pupils' sanitary accommodation Pupils' storage Pupils' gymnasium changing	10.50
Administration	4.70
Circulation	14.25
Dining, kitchen and ancillary rooms	5.45
Boiler chamber, tanks, etc. ...	5.55
	100.00

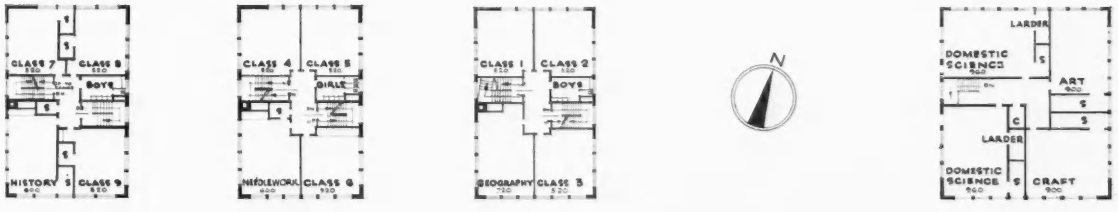
Construction: The constructional frame is reinforced concrete on rc strip foundations. The single-storey parts, except gymnasium and assembly hall, are load-bearing brickwork. The subsoil being chalk, the average depth of foundation bottom was 3 ft. 6 in. Structural floors are prestressed plank beams. The external brickwork is in 11-in. cavity walling, faced with hard stocks. The cladding between cill and head of window is in teak V-jointed boarding, and the rc columns in the fenestration are rendered in mineral aggregate.

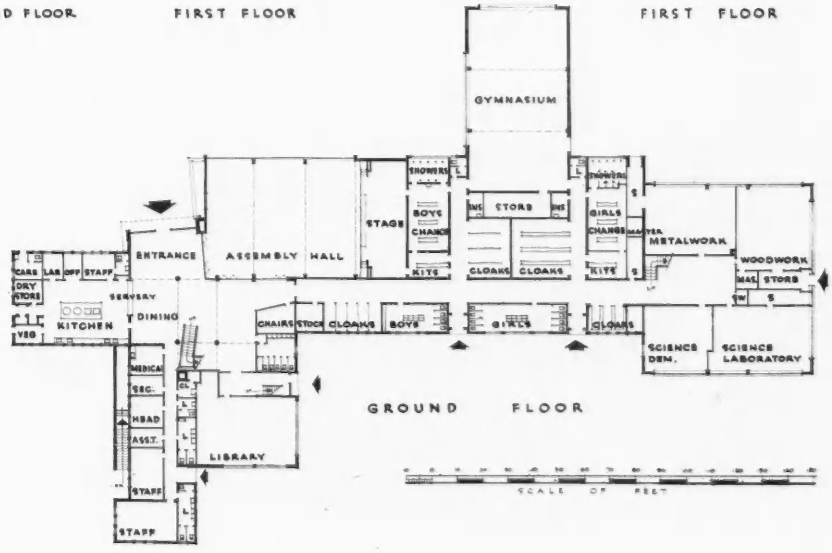
Finishings: The internal wall finish is, in general, emulsion paint on plaster. Cement glaze is used in corridors and lavatories to the height 5 ft. Ceilings generally are sprayed with Vermiculite on rendering. Flooring for classrooms is thermoplastic tile; special subjects rooms, wood block; assembly hall, gymnasium and entrance hall, opepe strip; administration and library in





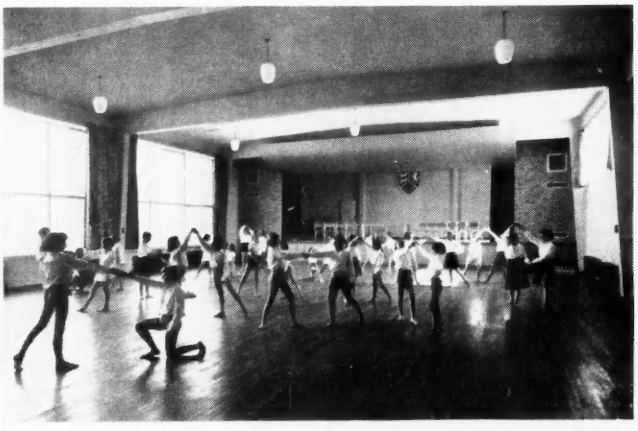
Main classroom block from SW.





Above is shown the entrance hall and stairway to the classrooms. The entrance hall can be used also as dining space. Below is the assembly hall, looking towards stage.

THE CHARLES DICKENS SCHOOL, BROADSTAIRS



cork tiling; and ground-floor corridor in granolithic. Columns in the entrance hall are finished in black mosaic.

The total contract price for this school was £122,341, and the net cost £220 per place.

Heating: The heating plant is beneath the administration wing; hand-fired boilers are employed. Mains are run in crawling ducts. Low-pressure hot water heating by radiators is the general provision. In special subjects rooms, where convenient radiator positions are usually impossible, and here and in assembly hall, forced air convectors through hot water heating coils have been installed.

Sub-contractors and suppliers were:

Structural flooring, Costain Concrete Co., Ltd.; heating and hot water, G. N. Haden, Ltd.; electrical installation, Electrical Installations, Ltd.; metal windows, Senlac Metal Casements, Ltd.; ironmongery, James Gibbons, Ltd.; Vermiculite ceilings, Pyrok (Contracts), Ltd.; hardwood, thermoplastic and cork floorings, Hollis Bros., Ltd.; terrazzo, mosaic, Diespeker and Co., Ltd.; sanitary fittings, Alfred Olby, Ltd.; cloakroom fittings, Cloakroom Equipment, Ltd.; layered roofing, Permanite, Ltd.; cement glazes, Quickset Water Sealers, Ltd.; special rendering, Mineralite Rendering—Kendalls Flooring, Ltd.; sliding doors, Esavian, Ltd.; asphalt roofs, Natural Rock Asphalte, Ltd.; facing bricks, Eastwoods, Ltd.; roof lights, J. A. King and Co., Ltd.; slate cills, W. Perrin, Ltd.; and roller shutters, Shutter Contractors, Ltd.

Grey Coat Hospital, Westminster, SW

LAURENCE KING, FRIBA, Architect

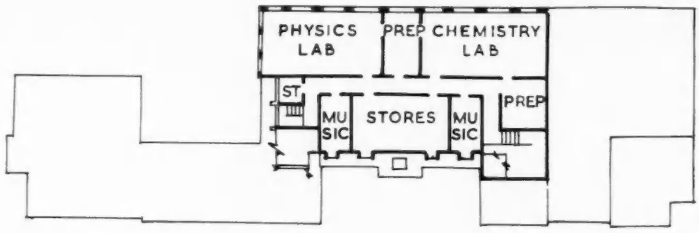
HURST, PEIRCE & MALCOLM, Consultant Engineers

HOPE BAGENAL, DCM, FRIBA, Consultant for Acoustics

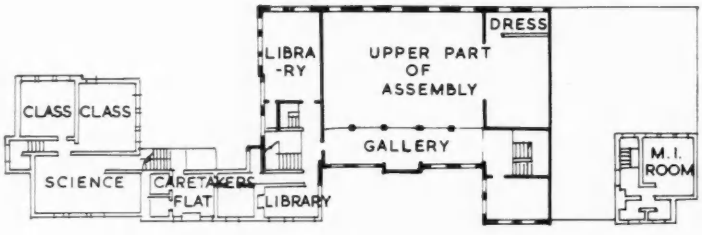
L. C. ROBERTS, FRICS, Quantity Surveyor

JOHN GREENWOOD, Ltd., Builders

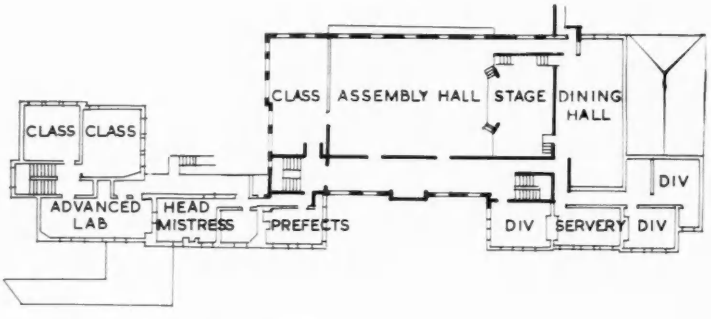
The main front.



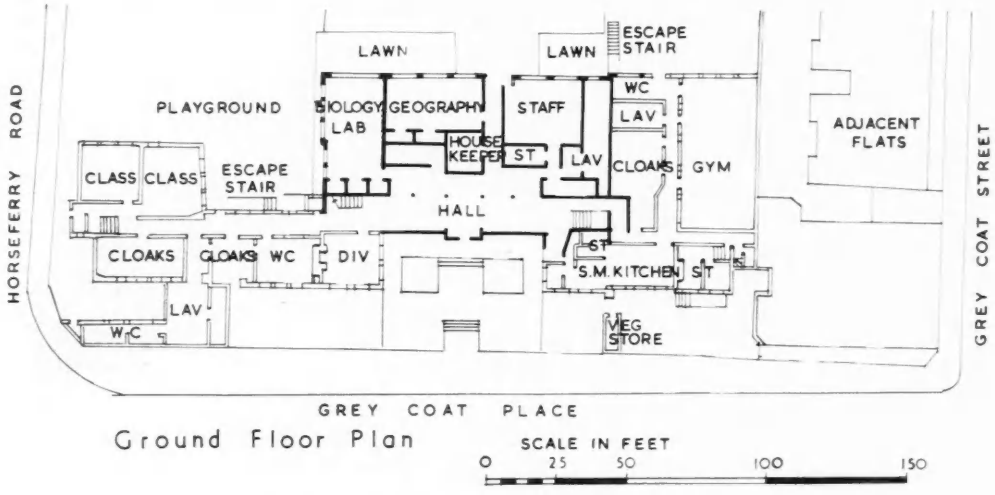
Third Floor Plan



Second Floor Plan



First Floor Plan



Ground Floor Plan

SCALE IN FEET
0 25 50 100 150

The plans : the blacked-in portions represent the new work.

The rear elevation.

THE centre part of the school known as Grey Coat Hospital was destroyed by fire in 1940. This included some classrooms, a staff room on the ground floor, an assembly hall (which was only 22 ft. wide) and a library. It was originally built at the beginning of the eighteenth century. Very little of the original building is left except the two wings on either side.

The Governors of the school required that the previous accommodation be provided, but to the requirements of the three-form entry school. Thus it was necessary to build a three-storey building in place of a two-storey one, and one of twice the width. It was also necessary to reinstate the traditional front, but to the new height. This set the problem of different treatment for the front and rear elevations.

On the top floor practically the whole of the new area is devoted to laboratories. These have cross ventilation by the introduction of a lower roof over the central corridor so that clerestory lighting could be inserted on either side of it. The floors are of Iroko, and these are supported on battens and then on felt for insulation purposes. The corridor is of cork.

Under the laboratories there is the main assembly hall where, owing to the large span, the main beams are made up of trusses to the full height of the third floor.

The library.

The assembly hall.

View of assembly hall from gallery. Below is one of the laboratories.

In consequence of this the full span of 40 ft. is obtained. The assembly hall has a fibrous plaster ceiling.

Sub-contractors and suppliers were:

J. Avery and Co., Ltd., curtain tracks and blinds, etc.; R. W. Bacon, Ltd., Ilford, Essex, lightning conductor; Berkeley Electrical Eng. Co., Ltd., electrical installation; Burley and Sons, Ltd., Weybridge, Surrey, garden layout; E. J. and A. T. Bradford, Ltd., repairing and re-emblazoning coat-of-arms; Concrete, Ltd., Hounslow, Middlesex, precast concrete floor and roof beams, *in situ* landings, balconies, cornices and strings; Crittall Manufacturing Co., Ltd., metal windows; Clark Hunt and Co., Ltd., Enfield, external railings; Dawnays, Ltd., structural steel work; E. Dent and Co., Ltd., clock; David Esdaile, Ltd., ceiling to assembly hall and for ceilings generally; The Faith Craft Works, Ltd., memorial board.

Goddard and Gibbs, Ltd., copper light glazing; Griffin and George, Ltd., Mitcham, Surrey, laboratory fittings; Harvey Brothers, Portland stone cills; General Electric Co., Ltd., lighting fittings; J. A. King and Co., Ltd., precast concrete window cills; The Meadow Foundry Co., Ltd., Mansfield, Notts, pipe trench covers; Peter Markham and Charles Ebbutt, Croydon, wall tiling, terrazzo and wc partitions; Morgan and Partners, Ltd., Cowley, Uxbridge, cupola and joinery to assembly hall; The North Thames Gas Board, gas fittings; Pressdee, Ltd., plumbing; Permanite, Ltd., asphalt flats and gutters; Semtex, Ltd., Semastic tiles.

Stevens and Adams, Ltd., hardwood strip flooring and woodblocks; Twisteel Reinforcement, Ltd., reinforcement to concrete staircases; Wontner-Smith, Gray and Co., Ltd., heating installation and ventilating system; George Wright, Ltd., balcony railing, staircase and balustrading; Yannedis and Co., Ltd., ironmongery; John Bolding and Sons, Ltd., sanitary fittings; Charles Turner and Son, Ltd., paints; Broad and Co., bricks and roofing tiles; Noelite, Ltd., Borough Green, Kent, Noelite paving; Bratt Colbran, Ltd., fireplaces; and Strand Electric and Engineering Co., Ltd., stage lighting and equipment.

THE GREY COAT HOSPITAL, WESTMINSTER

SE end of station, showing main entrance. Below : General view of station from the Kennington-road.

Kennington Police Station

Designed in the Chief Architect's Department of the Office of the Receiver for the Metropolitan Police District, Scotland Yard

J. INNES ELLIOTT, BArch(Hons.), ARIBA, Chief Architect

D. T. EDWARDS, ARIBA, Dip.TP, Senior Architect

Engineering works of Heating, Ventilation and Electrical Installation carried out under the direction of the Receiver's Chief Engineer

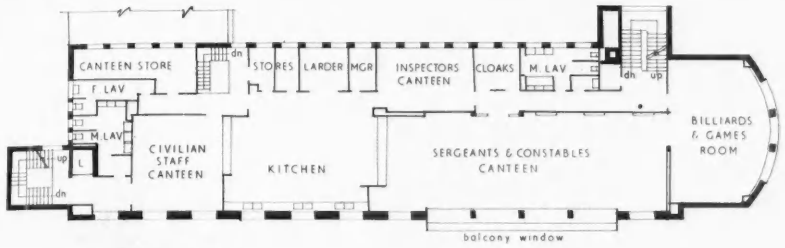
A. A. L. COLLIS, MIMechE

Consultant for RC Design

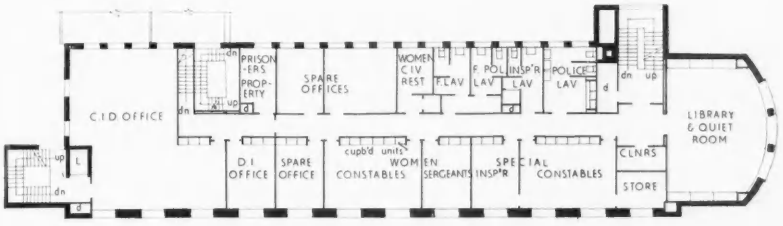
JOHN MASON, BA(Cantab.), AMICE, MIStructE

Quantity Surveyors : DAVSON & PRICHARD

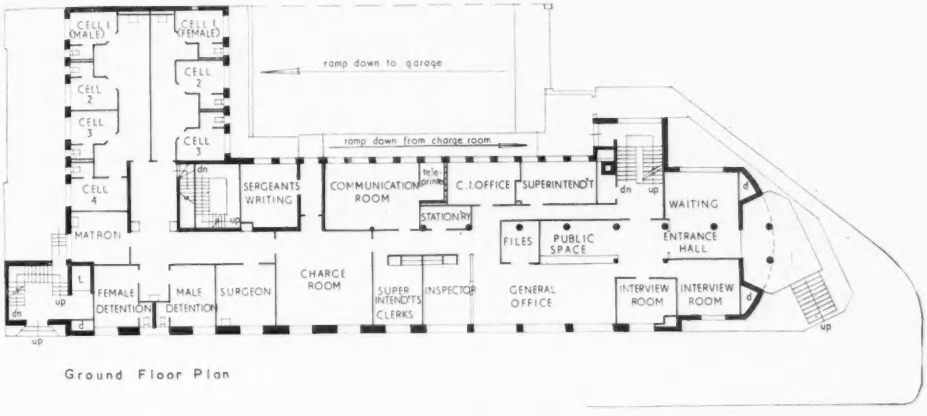
General contractors for RC sub-structure and frame : F. & F. H. HIGGS, Ltd.; general contractors for work of completion : GRIGGS & SON, LTD.



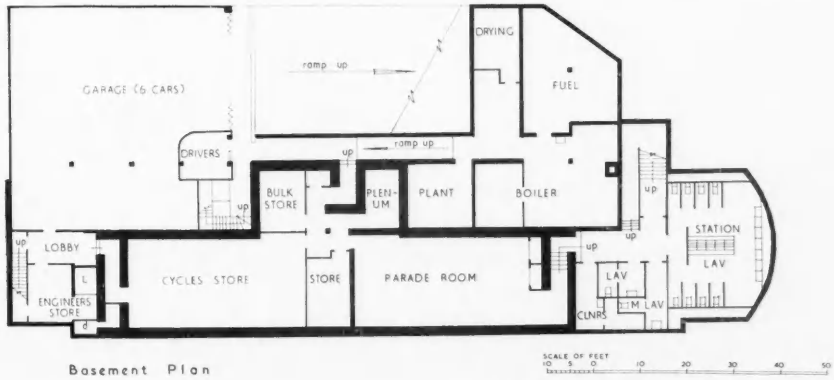
Second Floor Plan



First Floor Plan

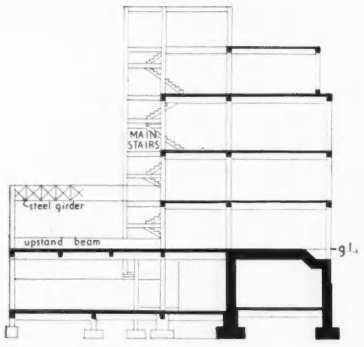


Ground Floor Plan

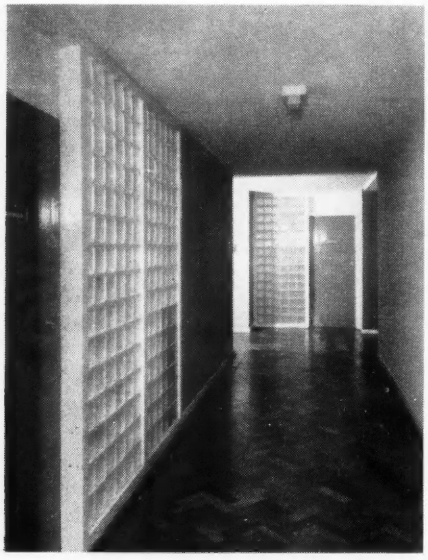


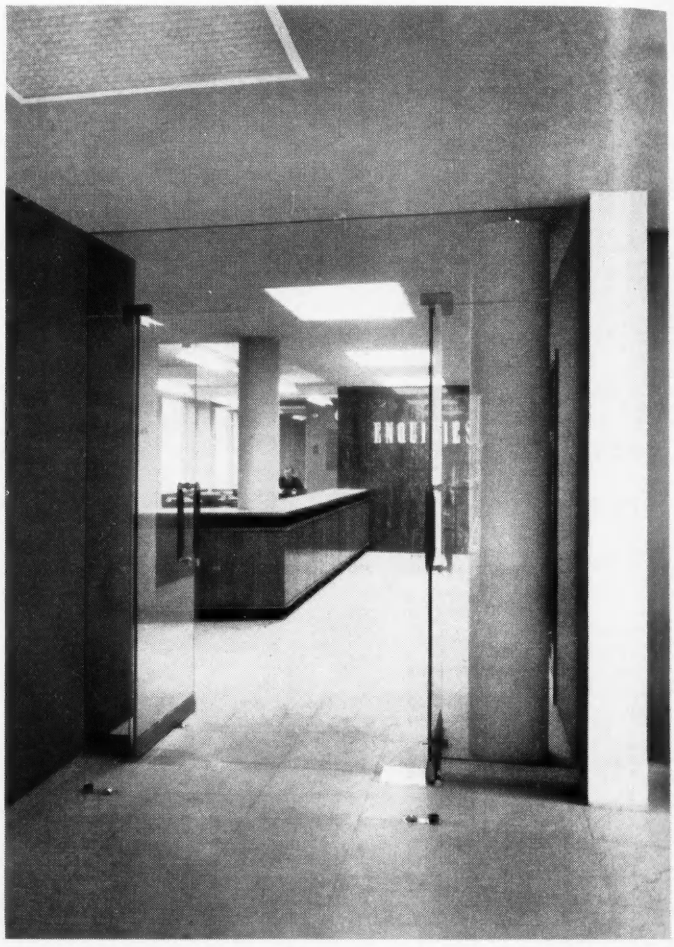
Basement Plan

KENNINGTON Sub-divisional Police Station, opened by the Home Secretary, The Rt. Hon. Gwilym Lloyd George, MP, on October 25, 1955, is the first completely new station to be built in the Metropolitan Police District since the war. The original station, built in 1874, had outlived its usefulness and adaptability when it was demolished in 1939, and consequently the station had had to function over the past 16 years in very restricted quarters in Kennington-lane Section House.



Section A-A





Above : Inquiry office seen from waiting hall. Left : Corridor from charge room to detention rooms and cells. Below : Public space and counter in inquiry office.

General canteen, viewed from billiards room. Below : Reading and study room.

The Site: The building occupies a long narrow site 69 ft. deep with 176 ft. frontage to Kennington-road and is situated at the southern portion of the triangle of land bounded by Kennington-road, Mead-row and Westminster Bridge-road.

Planning: The narrowness of the site and the need to provide as spacious a yard as possible at the rear, together with considerations of light angles, determined the width and general shape of the building, while the basement and ground-floor levels were fixed in relation to the high water table in the sub-soil.

The aim of the planning is to provide a general inquiry office for the public, and administrative and operational centre for police work. In addition to the general inquiry office, there are a variety of activities operating at police stations by more or less self-contained groups requiring differing degrees of segregation in planning. The administration of the station is centred in the inquiry office, and arranged in close proximity are offices for the superintendent, chief inspector, inspectors and communications. The detail arrangements of floors are shown in the plans, except for the top (3rd) floor which is additional to the station requirements and houses Scotland Yard headquarters' staff.

Construction: The sub-structure and framed superstructure are in reinforced concrete. The external walls are in Quetta bond brickwork 13½ in. thick; internal partitions are in moler block. Excavations proved the water table in sub-soil to be at 3.00 OD and with the pavement at 12.00 OD it was necessary to raise the ground floor to 18.00 OD to keep the basement and foundations out of water pressure, and avoid the expense of asphalt tanking.

External Finishes: Externally the walls are of Stamford-stone golden stocks with flush pointing slightly lighter in colour. Window openings in the Kennington-road frontage are lined with 1½ in. thick San Stephano white marble. Extra prominence is given to the canteen windows by a balcony enclosure of Portland stone framing on reinforced concrete cantilever construction and with the intermediate concrete columns clothed with black Levanto marble. The balcony balustrade is in mild steel bars with bronze handrail. The windows are double glazed and sliding type to the full height. Portland stone is used for the plinth, copings and window surrounds over the main entrance. The public entrance, recessed under the main building, has mahogany-faced flush doors flanked by black red-veined Levanto marble slabs with Portland stone splayed walls and encased columns. The entrance platform is in reinforced concrete on brick construction, finished with York stone paving slabs. The flight of steps from the pavement is in reinforced concrete, cantilevered from a centre string and finished with York stone treads.

Internal Finishes: Floors to rooms and corridors generally are in lino tiles on cement screed. Polyvinyl floor tiles are used in the canteens, quarry tiles in the kitchen, terrazzo with non-slip nosings for the stairs and Missanda wood block flooring for the parade room, charge room, surgeon, matron and detention rooms; terrazzo floor tiles in the lavatories and brown asphalt in the cells, and white San Stephano marble tiles in the entrance hall. Cycles, cleaners, electrical intake, heating chamber and garage, etc., are in granolithic.

Engineering Services: Heating is by low-temperature embedded panels which have proved the most efficient system for the prevailing conditions. For the ground floor and basement, double-sealed windows and plenum installation are installed to ensure a clean working atmosphere and to minimise intrusion of traffic noises. Oil fuel and automatic (weather-operated) controls are included further to ensure minimum running costs.

Lighting is partly by fluorescent and partly by tungsten units, the former mainly in the continuously occupied portions. A completely concealed ducting is provided to facilitate telephone wiring and alterations thereto. Cell calls, fire alarms and relevant items have been carefully combined into a central indicator panel.

Sanitary Engineering Services: Drainage, waste plumbing and cold water distribution are generally in ducts within the building and were fully detailed to ensure their proper integration with other engineering services. Drainage, on the combined system, is almost entirely within the building and is laid in cast iron with caulked lead joints. The waste plumbing is in copper with welded joints and was tested to 3 lb. per sq. in. before duct casings were built. Surface water from main roofs is connected to this system, with suitable safeguards, to improve its self-cleansing properties.

Sub-contractors and suppliers were:

Williamson Cliff, facing bricks; Braithwaite, storage tanks; King and Co., Ltd., window frames; Bradford and Co., precast concrete floor units; Universal Metal Furring and Lathing Co., false ceilings; Stitsons Sanitary Fittings, sanitary fittings, etc.; Leeds Fireclay Co., Ltd., faience tiling; Bennet and Sons, lino tiles; Art Marble Stone and Mosaic Co., marble pavings; Benham and Sons, Ltd., panel heating and kitchen sinks; St. James Tile Co., paving and cills; Keighley Lift, Ltd., goods lifts, aluminium sheets, etc.; Stevens and Adams, block flooring; Quality Asphalte Co., Ltd., asphalt paving; Everseal Products, Ltd., waterproof roofing; Duncan Watson, Ltd., electrical installation; F. E. Beaumont, Ltd., lightning conductor; P. C. Henderson, Ltd., sliding door gear; Evans Lifts, Ltd., passenger lift; Blackburn and Son, Ltd., Semtex floor tiles; The North Thames Gas Board, kitchen equipment (gas-fired); Haywards, Ltd., cell doors and frames; Haskins (E. Pollard and Co., Ltd.), rolling shutters; Aygee, Ltd., special glazing.

Jas. Gibbons, Ltd., balustrading; Parker, Winder and Achurch, ironmongery; T. W. Palmer and Co., composite gates; Light Steelwork, Ltd., balustrading; Hall and Co., facing bricks; Lambeth Borough Council, construction of crossover; Odoni and Co., Ltd., four bicycle stands; William Waine, Ltd., upholstery; James Clark and Eaton, Ltd., armour-plate doors; Tidmarsh and Son, Venetian blinds, additional blind boxes and blinds; Sumerling, kitchen cabinet, etc.; Engert and Rolfe, paving to ramp; Jonathan James, fibrous plaster pelmets; Gyproc Products, Ltd., partitions; The Lettering Centre, lettering; Allan H. Williams (Chester), Ltd., notice board, bushboard, backboards to hat and coat hooks; Scaffolding G.B., cape racks; Williams and Williams, window cleaners' belt eyes; and Knight and Co., observation plates.

KENNINGTON POLICE STATION

Malet-street front. Below : Malet-street entrance.

Students' Union Building, London University

ADAMS, HOLDEN & PEARSON, FF.RIBA, Architects

Consulting Engineers
R. TRAVERS MORGAN & PARTNERS

Quantity Surveyors
WIDNELL & TROLLOPE

Builders
HIGGS & HILL, LTD. (foundations)
J. JARVIS & SONS, LTD. (superstructure)

THE foundations over the whole site of the Students' Union Building were set down in the period, July, 1950, to December, 1951, by Messrs. Higgs and Hill, Ltd. The work on the superstructure of the Malet-street block and south wing followed closely upon the completion of the foundations, and was carried out by Messrs. J. Jarvis and Sons, who completed these two parts in September, 1955, for occupation by the University of London. These contractors are now engaged on the construction of the remaining parts of the building comprising the swimming bath,

the assembly hall and the badminton and squash courts.

The building is a steel-framed structure, brick clad, following the character of the earlier brick buildings within the University precinct, and is the centre for the social, cultural and sporting activities of the students of the University of London.

As a federal university, the London is split into almost 50 different colleges, institutes and medical schools, scattered across London, with one or two outside the bounds of Greater London. The Students' Union premises at most of these institutions are, however, limited in the amenities and in the service which they are able to offer. The University Union, on the other hand, will be open seven days a week until late at night, and will provide a number of facilities not generally available elsewhere, such as the swimming bath, gymnasium and hall. The building also provides a student centre within the University precinct in Bloomsbury.

The plan form was dictated by the swimming bath which was set down into the ground so that its roof structure did not exceed the height of the first floor. At this floor level the main group of common rooms are situated, together with the assembly hall and bar, and the future swimming bath roof which will become a garden terrace for open air activities.

As well as the usual aquatic sports, the 33⅓-metre swimming bath provides for recording under-water activities by film or television

The main staircase. Below : The council room on second floor. This is divided by folding screens to form three committee rooms.

The bar on first floor. Mural is by Mr. Clive Gardiner. Below (centre) is a typical ground-floor office and (bottom) the second-floor library.

cameras through the observation windows set in the walls of the bath at the deep end. A similar provision for picture recording by camera has been provided from the viewing gallery at the north end of the bath. From this point a camera can follow a swimmer from one end of the bath to the other, or focus on individual diving displays from the diving stage at the opposite end.

Changing rooms at the north end have been provided for men and women students in connection with the swimming bath, and independent dressing-rooms for both sexes at the south end to serve the needs of visiting teams using the gymnasium, and these have been so related to the swimming bath as to give access to the pool when required. The assembly hall forms the north wing fronting Byngplace, with the badminton hall over. The refectory is placed on the topmost floor of the Malet-street block.

A house system of communication by speaker, music, etc., to various parts of the building is installed and controlled from the central porter's desk in the entrance.

The council room, placed on the second floor, is approached from the central staircase, and provides for seating 50 councillors and the University President. The room is capable of being divided into three separate parts by the drawing of Esavian screens.

Specialists commissioned were as follow:

Design of University Arms for carving in Roman stone, interior of entrance hall, Mr. William M. Gardner, ARCA.

Carving of the panel by Mr. A. Stokley, employed by J. Whitehead and Sons, Ltd.

Design and carving of University Arms in Portland stone on exterior over main entrance, Mr. Alan Collins, ARCA.

Artists commissioned by the Edwin Austin Abbey Memorial Trust to design and prepare wall

The refectory (fourth floor).

panels in the interiors: Mr. Gilbert Spencer, ARA, panel in entrance hall of assembly hall; Mr. Clive Gardiner, bar, first floor; Mr. John Nash, RA, wall of assembly hall entrance, first floor; and Mr. James Fitton, ARA, wall of assembly hall foyer, first floor.

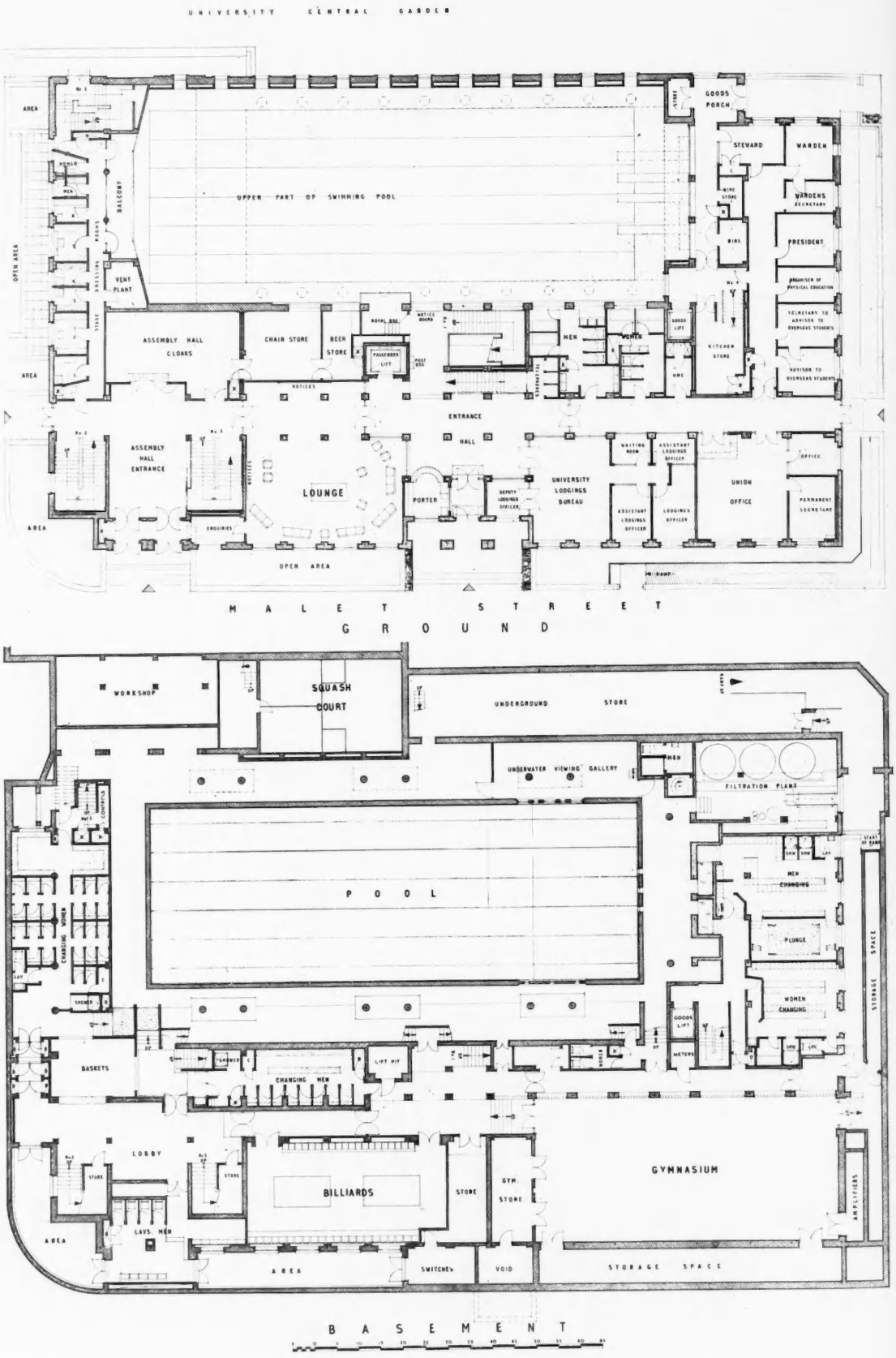
Lettering by Mr. George Mansell.

Sub-contractors and suppliers were:

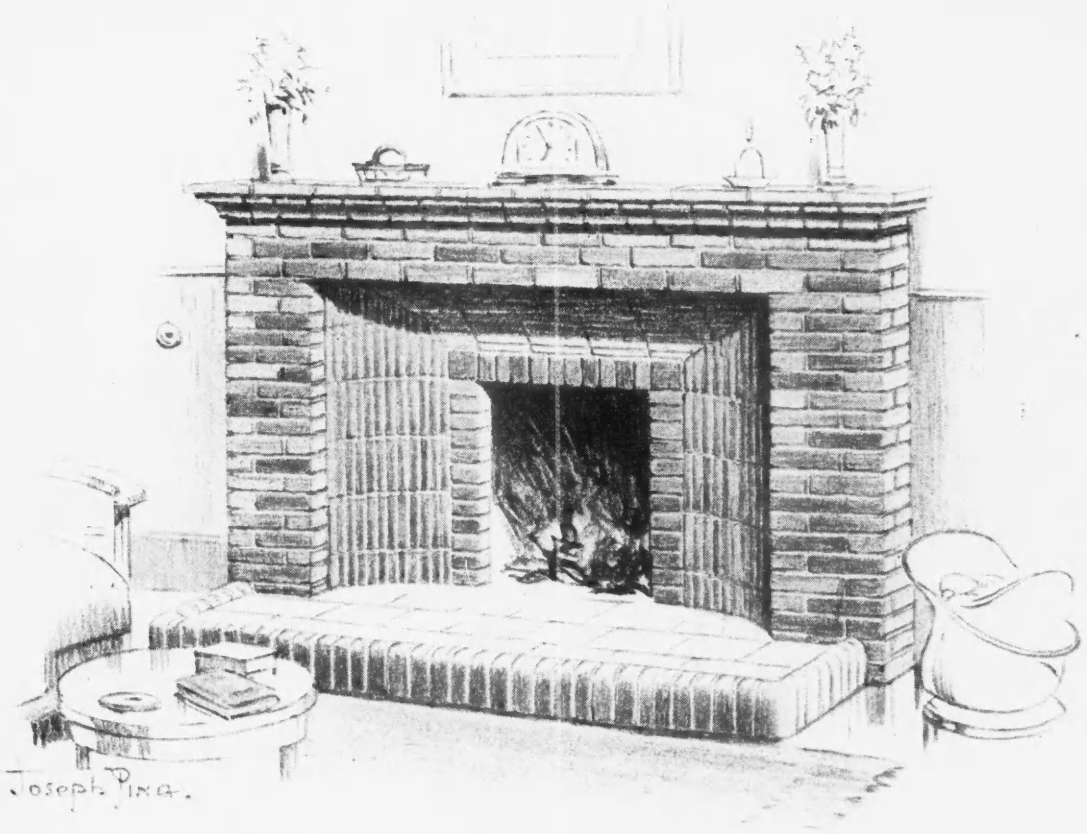
Art Pavements and Decorations, Ltd., terrazzo; J. R. Beadon, polishing; J. Bolding and Sons, Ltd., sanitary fittings; James Clark and Eaton, glass brick panels; Richard Crittall and Co., Ltd., heating and ventilating; Dorman Long and Co., Ltd., steel erection; Esavian, Ltd., sliding partitions; James Gibbons, Ltd., ironmongery; J. W. Gray and Son, flagstaff and lightning conductor; G. N. Haden and Sons, Ltd., internal plumbing; Hollis Bros., Ltd., wood flooring; Henry Hope and Sons, Ltd., metal windows; Korkoid Decorative Floors, cork and lino floors; Leay Glazing, glazing and mirrors; Light Steelwork (1925), Ltd., railings and balustrades; Limmer and Trinidad, Ltd., asphalt; Loftus, Ltd., bar; North British Rubber Co., rubber flooring; North Thames Gas Board, gas services; Pilkington Bros., dome lights; Pollard and Co., Ltd., flush doors; W. B. Simpson and Sons, Ltd., wall tiling; G. N. Haden and Sons, Ltd., and Stoner and Saunders, Ltd., external plumbing; James Slater and Co., Ltd., kitchen equipment; South Western Stone Co., Ltd., Portland stone; Tentest Fibre Board Co., acoustic ceiling and walls; Troughton and Young, Ltd., electrical work; Waygood-Otis, Ltd., lifts; and J. Whitehead and Sons, Ltd., Hadene stone wall linings.

Contractors supplying interior furniture and equipment were: furniture, Waring and Gillow, Ltd.; curtains, Taylor and Marr, Ltd.; linen, Peter Jones; carpets, crockery and cutlery, Holloway Bros., Ltd.; and miscellaneous, Heals, Ltd.

The mixed lounge (first floor).



(First- and third-floor plans on page 85.)



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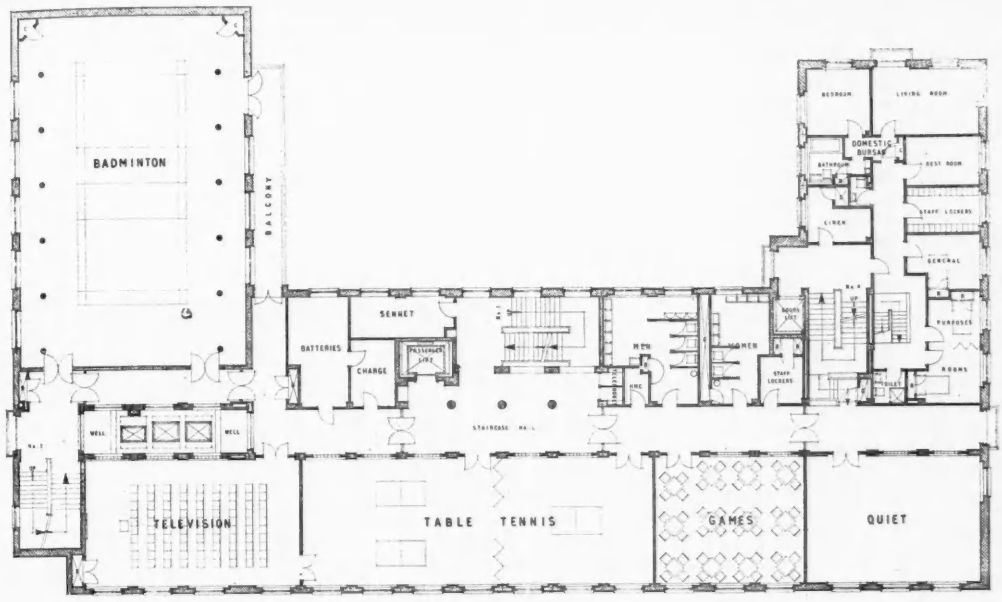
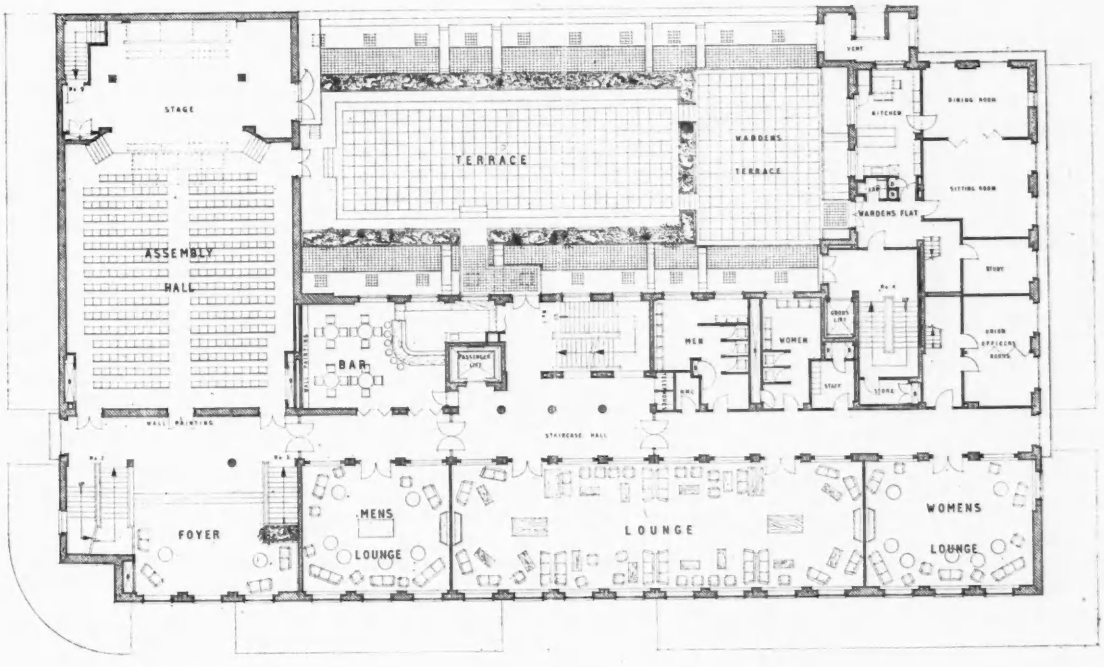


THIRD



FIRST

SCALE IN FEET

STUDENTS' UNION BUILDING, THE UNIVERSITY OF LONDON

Messages from Leaders of the Industry

(*Continued from page* 45.)

they have readjusted their programmes in the light of the Budget another period of delay follows while the industry re-gears itself.

As you rightly pointed out, even a slight over-estimation of the amount by which the current building programme should be cut can easily lead to major disruption within the industry, as experience in the earlier post-war years clearly showed. The important thing for the Government to remember, and I am sure they will, is that it would be a grave mistake to jeopardise the long-term potential of the building industry for the sake of introducing a certain amount of flexibility into the current short-term policy of restricting capital investment.

With regard to materials, supplies of steel and, more recently, glass have been giving cause for concern but generally speaking—remembering the size of the programme we have on hand—we have managed to get along better than we thought we would 12 months ago. I am hoping that in 1956 the manufacturers will be able to do even better and that materials shortages will cease to be a factor influencing the industry's rate of progress.

In conclusion I would like, through the columns of *The Builder* to extend to all who are concerned with the affairs of our great industry my cordial wishes for a prosperous and successful New Year.

From Mr. Leslie Wallis, OBE, JP, President of the Institute of Builders

ONCE again it is my privilege to send to all your readers my very best wishes for a happy and successful New Year.

Glancing back over 1955, I suppose one of the features of the year we remember with gratitude is the wonderful building weather we experienced. Seldom can the Clerk of the Weather have been kinder to us and, having shown us what can be done, let us hope the standard will be maintained.

The other feature of 1955 which in my opinion was even more important than the weather is the establishment by the Institute of Builders of the Board of Building Education. In achieving this I gratefully acknowledge on behalf of the Institute the co-operation and support so readily given by our friends of the National Federation of Building Trades Employers. I am confident that this Board can and will make a tremendous contribution towards the welfare of the building industry in the sphere of education. It has the keen interest and support of the Minister of Education and, with the active good will of the industry of which there has already been ample evidence, it must succeed. The first Study Group will submit its draft report to the Board early in the New Year, on the system of education as it is to-day. With this information before it, the Board will then be able to take the necessary action to eradicate the faults and strengthen the weak points and so ensure that the education available is adequate for the needs of our great industry.

I hope that in 1956 all builders will take a greater interest in education than has been shown in the past and so give encouragement to the excellent staffs of the many technical and technological colleges and schools where such good work has been done. It is, of course, true that experience is still one of the best teachers, but it is vitally important that every possible educational aid should be employed to enable a man to become really efficient in the shortest possible time.

It is certain that the New Year will bring with it increases in labour and material costs. The only way we, as builders, can attempt to offset these increases is to ensure that our management and supervision is really efficient. We would all agree that we should build more efficiently and economically if we had a little less work on hand, but it may well be that continued rising costs will reduce the volume of work below the level we have in mind and so create unemployment in our industry. If anything like full employment in our industry is to be maintained, a halt must be called to the ever-increasing costs of labour and materials. Builders have a great service to render to the community; we can be justly proud of our achievements in the past; let us go forward into 1956 determined to spare no effort to increase our efficiency and so play the great part expected of us in the well-being of our country.

To all your readers, and to you, Mr. Editor, I send my best wishes for a happy and successful New Year.

From Mr. P. C. Ford, JP, President of the Federation of Associations of Specialists and Sub-Contractors

AT the end of the year just ended, the building industry, in common with the rest of the nation, found its confidence a little dashed. The rather brash assumption, which we tended to make some months ago, that post-war economic problems had been solved once and for all is now discredited, and looking around we admit reluctantly that the industry has allowed its resources to become overstrained once again.

A more sober attitude will carry us into the year ahead; we can take comfort from the belief that fundamentally our position is sound and that the setback, besides being salutary, has been slight. I wish most heartily all the readers of *The Builder*, and members of the Associations within my own Federation particularly, a very prosperous New Year. I hope too, something of the good feeling which the New Year engenders will manage to survive the recent celebrations. The last year has shown some renewal in cordiality between various sections of the industry and I look forward to this being continued in 1956, so that we may solve the problems which will certainly present themselves by co-operation and with mutual sympathy.

From Sir Richard Coppock, CBE, General Secretary, National Federation of Building Trades' Operatives

GREETINGS to all readers of *The Builder*. I think the building industry enters the New Year with a more sober outlook than on previous occasions and perhaps with a sombre spirit. We are

Sir Richard Coppock, CBE

aware of the Government's policy on housing; a policy which I think will curtail municipal building activities and perhaps discourage even private enterprise from a too rash adventure into the field of construction. We know too that the defence programme, as far as the building part of it is concerned, is at an end.

All this gives us substantial food for thought. However, at the moment our affairs seem to be prospering and we can only hope that they will continue to do so.

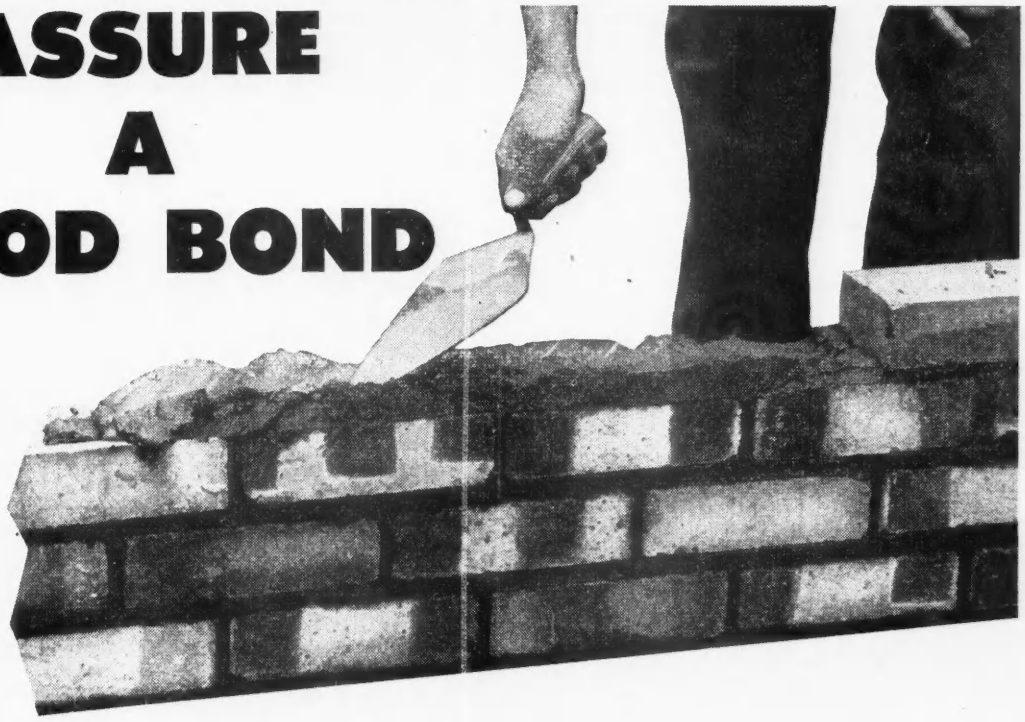
COMPETITIONS OPEN

GOVERNMENT BUILDING: UGANDA.—Legislative council building at Kampala. Promoted by Government of Uganda. Assessor: H. Thornley Dyer, FRIBA, AMTPI, advised by K. Begg, FRIBA, chief architect, Uganda Public Works Department, and G. T. Bragg, AMIMunE, ARICS, town engineer, Kampala. Premiums: £750, £500 and £250. Applications by August 20, 1955; questions by August 31, 1955. Closing date: January 21, 1956. Conditions from Clerk of Legislative Council, PO Box 2270, Kampala, Uganda, East Africa. Deposit: £3 3s. *July 29, 1955.*

OLD PEOPLE'S DWELLINGS, SURREY.—20 dwellings for old people, warden's accommodation and community rooms, for erection at East Horsley. Cost not to exceed £46,000. Promoted by the Architects' Benevolent Society. Assessors: H. S. Goodhart-Rendel, CBE, FRIBA; Arthur W. Kenyon, CBE, FRIBA, MTPI; and G. Grenfell Baines, ARIBA, AMTPI. Premiums: £100 and £75. Closing date: April 6, 1956. Conditions from the Secretary, ABS, 66, Portland-place, W1. Deposit: £1 1s. *December 9, 1955.*

*** *The date in italics refers to the issue of* The Builder *in which fuller details were published.*

ASSURE A GOOD BOND



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1955
Reflection

In pleasing retrospect, 1955 has been a year wherein mutual confidence has characterised our business relationships. To all our friends in the Architectural and kindred Professions, to our Merchants and Distributors and to our associates in the Building Industry, whose support and co-operation it has been our privilege to enjoy, we tender our sincere thanks—and our best wishes for a very happy and prosperous New Year.

1956
Resolution

Looking forward into 1956, it will be our constant endeavour to be worthy of the trust not only of our old friends but of new ones too. It is our firm belief that in the pursuance of our resolute fixed policy—that Craftsmanship with despatch be the keynote of our service—we shall indeed maintain and augment goodwill and progress.

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Notes of the Week

Lectures for Boys and Girls

THREE informal lectures for boys and girls were given by Mr. William Allen, ARIBA, at the Royal Institute of British Architects, London, on January 2, 4 and 6.

In his first two lectures Mr. Allen spoke on the history and science of many kinds of building materials, and some of the ways in which mankind, both ancient and modern, has solved the problems of building. Lastly, on January 6 he spoke on the problems of light, sound and colour influence. Mr. Allen concluded with a demonstration of a sound that has to be provided for more and more in the roofing of buildings—the jet engine. He played on a recording machine the exciting (and it is hoped not destructive) noise of the Comet Jet Airliner taking off from London Airport.

After each lecture the young people showed their interest by asking questions, some of which were of a penetrating and mature nature. They had obviously selected their chosen profession early and it seems that architecture will not lack recruits from this generation of children. The lectures were well illustrated with colour and black and white slides, and films.

Public School Boys in Building

THE OPPORTUNITIES open to public school boys in the building industry was discussed on January 6 at a conference held at the Dorchester Hotel, London. The NFBTE were hosts to the Public Schools Appointments Bureau and the careers masters of many public schools. Mr. D. E. Woodbine Parish and Mr. L. J. Holloway gave short talks on the industry and its opportunities in executive grades.

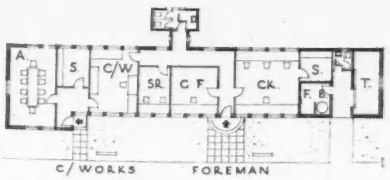
The careers masters asked questions mostly about terms of articled pupils and the like, and eventual salaries and monetary subsistence while the entrant was undergoing technical training.

One master gave an example of a boy who joined the industry and found that he had to work miles from any place where there were social and welfare activities; he left the industry. Mr. Woodbine Parish, answering, admitted that there was not a complete remedy at present for that problem. Surely, however, a little early hardship should not be treated as a major problem? As much should be done as is possible to improve the welfare of the building operative but the public school boy should not be especially catered for at such an early stage of his career.

"Heads Together"

PREPARED chiefly to assist their own clerks of works who represent them on building sites, "Heads Together," a pamphlet written by Mr. Arthur W. Kenyon, CBE, FRIBA, and Mr. Peter Kenyon, MICE, contains such a store of practical wisdom and sound advice that it deserves a wider circulation than among the firm's own clerks of works and contractors and sub-contractors with whom they are associated, and might with advantage, we would suggest, find its way into the hands of young architects who cannot possess the authors' wide experience.

The essence of the message conveyed in the pamphlet is the need for those on the site—clerk of works, contractor's agent, general foreman, sub-foremen, tradesmen and labourers—to work together as a team "with the sole common object of producing a good building." Here it is pointed out that the clerk of works, owing to the changes that often occur in the contractors' staffs, may be the only member of the site team who sees a scheme through from start to finish, "and he is therefore a very vital person on the job." Other sections, besides that on The Site Team, deal with Site Records, Drawings, Site Offices, Site Meetings, Site Generally, Welfare and Trades.

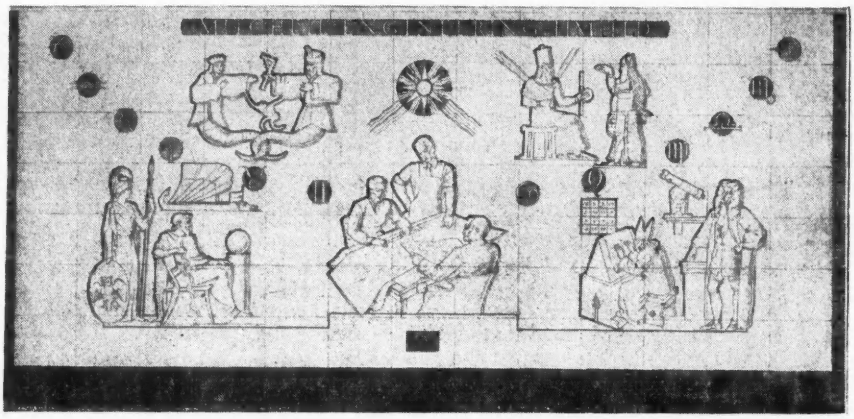


Plan of site headquarters, as suggested in "Heads Together." Key: A. Architect's Office. S. Samples. C/W. Clerk of Works. SR. Surveyors. G.F. General Foreman. CK. Clerks. L. Lavatory. B. Boiler. F. Fuel. T. Tools. (See note.)

Bridging the Gap

A SECOND INSTANCE of an architect using the printed word to assist the process of building springs from the Mitchell Engineering offices illustrated in this issue. Believing that one purpose at least of a commercial building is that those who work in it should feel at home (especially true when an existing staff is being moved from old premises which they know) the company have tried to bridge this gap by issuing to every employee an illustrated booklet describing the new headquarters floor by floor, outlining how the building works and the ideas behind its construction. The scheme, which was suggested by Mr. Howard Lobb, the architect, was very well received, we gather, and as the booklets were distributed before the move took place, employees felt the new building to be not unfamiliar. This is an idea which could be copied with advantage by other industrialists.

LECTURES FOR CHILDREN: We show a photograph of the audience which packed the Henry Jarvis Hall at the RIBA on the occasion of Mr. W. A. Allen's second lecture on January 4, when one young member (see below) tested a prestressed concrete plank. Mr. Allen is seen to the right.



NEW OFFICES, PETERBOROUGH : Shown on left is a drawing of the great mural now being executed on the new offices at Peterborough for Mitchell Engineering, Ltd. In Portland stone, and measuring 50 ft. by 25 ft., the mural is being carved by Mr. A. J. Ayres whose design was selected in competition. The architects for the building (illustrated in this issue) are Messrs Howard V. Lobb and Partners.

News of the Week

Seven Dials Offices

PLANS for a 14-storey office building, to be erected near Seven Dials in the upper part of St. Martin's-lane, WC, have been prepared by Mr. Basil Spence, OBE, ARA, FRIBA, for Thorn Electrical Industries. On the St. Martin's-lane frontage, at right-angles to the main 14-storey block, is to be a two-storey range of showrooms with shop windows at street level. Vehicles will reach the offices either by passing beneath the showrooms or from West-street, where a small demonstration theatre has been planned alongside the main block. The latter will have an exhibition gallery at mezzanine level and a boardroom in the form of a penthouse on the roof.

The building is to be of reinforced concrete with Portland stone facing to the blank end wall on the St. Martin's-lane front, and possibly green Westmorland stone for the wall surfaces between the windows. The Royal Fine Art Commission has commended the design, which is now being considered by the London County Council for planning approval.

Overseas Affiliations

NEGOTIATIONS for affiliation between the Town Planning Institute and the Australian Planning Institute have now been concluded and similar negotiations are taking place with the Institute of Town Planners of South Africa, states Mr. E. H. Doubleday, OBE, FRICS, president TPI, in a survey of the year's work contained in the Institute's 1955-56 Year Book. During the year, 225 new members were elected and 22 associate members transferred to membership, and the Institute has approved a proposal by Birmingham College of Arts and Crafts to institute a course ranking for recognition as carrying exemption from the Final Examination. Copies of the Year Book, price 4s., from the Institute at 18 Ashley-place, SW1.

Kent Architecture

AN INTERESTING EXHIBITION of architectural work designed by members of the Maidstone chapter of the South Eastern Society of Architects is now on show at the Museum, Maidstone, Kent, until January 31 (open 10 a.m. to 4.30 p.m., Sundays excepted).

Architect Honoured

PROFESSOR H. O. CORFIATO, FRIBA, SADG, has been made a Foreign Associate of the French Academy of Architecture. Professor Corfiato, with his partner, Mr. Stewart L. Thomson, is architect for the church of Notre Dame de France, Leicester-place, WC2, illustrated in this issue.

New Year Honours

MR. P. E. R. JEFFRIES, FRICS, Chief Surveyor to the Admiralty, was awarded the CBE in the New Year Honours list.

MR. KENNETH MORRIS, publicity manager of T. and W. Farmiloe Ltd., the makers of Nine Elms Paints, was in the recent New Year's Honours List. Mr. Morris was awarded the MBE.

MR. FRANK ROWDEN, who received the MVO for his work as general foreman on the King George VI memorial, is employed by Messrs. Holliday and Greenwood Ltd., and not as printed in our last issue.

COMING EVENTS

TUESDAY, JANUARY 17.

ROYAL INSTITUTION OF CHARTERED SURVEYORS.—"Development Plans and their Provision for Industry," by Mr. S. L. G. Beaufoy, CBE, FRIBA. P-PTPI, chief technical planner, Ministry of Housing. 12, Great George-street, SW1. 5.30 p.m.

RIBA.—Symposium on drawing office technique. 66, Portland-place, W1. 6 p.m.

WEDNESDAY, JANUARY 18.

INSTITUTE OF QUANTITY SURVEYORS (EAST ANGLIAN BRANCH).—"The Position of the Quantity Surveyor in the Building Industry," by Mr. Arthur J. Willis. FRICS, Hon. FIQS. The Assembly House, Theatre-street, Norwich. 7.30 p.m.

THURSDAY, JANUARY 19.

SOCIETY OF CHEMICAL INDUSTRY (ROAD AND BUILDING MATERIALS GROUP).—"The Use of Pulverised Fuel Ash for Brickmaking and Lightweight Aggregate," by Mr. B. Butterworth and Mr. W. Kinneburgh (Building Research Station, DSIR). Junior Institution of Engineers, Pepys House, 14, Rochester-row, SW1. 6 p.m.

THE MODULAR SOCIETY.—"What an Architect Wants from the Modular Society," by Mr. W. Tatton Brown, MA, ARIBA, AMTPI, deputy county architect, Hertfordshire. Building Centre, Store-street, WC1. 7 p.m.

FRIDAY, JANUARY 20.

BIRMINGHAM AND FIVE COUNTIES ARCHITECTURAL ASSOCIATION.—Annual dinner and dance. Grand Hotel, Birmingham.

RIBA GOLFING SOCIETY.—Annual dinner. Milestone Hotel, Kensington. 7 p.m.

GUILD OF SURVEYORS.—Evening lecture on "Various Systems of Prestressing Concrete," by Mr. J. N. Lowe. Building Centre, WC1. 7 p.m.

Architects' Party

NOT EVEN the fog prevented a large number of friends from turning up at the pleasant party given on January 5 by John Eastwick-Field and John Stillman at their John-street offices, Bedford-row. (Why Bedford-row when John-street neither adjoins nor runs off it, others must answer). Hot sausages, whisky and mild architectural argument made a splendid combination for keeping out the cold, and the fact that no one seemed anxious to go home was its own tribute to the success of the evening.

National Park Competition

PRIZES OF £35 and £15 are offered for the best designed symbol for the Pembrokeshire Coast National Park, states the Journal of the Town Planning Institute, entries to be submitted by March 1. Particulars from the Clerk of the Pembrokeshire CC, County Offices, Haverfordwest.

Appointments Open

WALTHAMSTOW EC invite applications for the post of Architect to be responsible for the Education Architect's Office under the general technical supervision of the Borough Architect, Engineer and Surveyor. Salary, £1,202 10s. x £52 10s.—£1,412 10s. Details advertised in this issue.

Professional Announcement

MR. LEONARD W. TRACEY and MR. J. W. O. HARRISON, AA.RIBA, announce that they have taken into partnership Mr. T. J. Coton, ARIBA, as from September 30 last. The firm will continue to practise under the style of E. G. Harrison and Tracey, at County Chambers, Corporation-street, Birmingham, 2.

FROM "THE BUILDER" OF 1856

Saturday, January 12, 1856

LABOURERS' COTTAGES. — On Friday week, at a dinner given by the Earl of Dartmouth, at Pattingham, to upwards of 120 of his cottagers and labourers, on the safe return of his lordship's brother, Captain the Hon. G. Legge, from the Crimea, the earl, in acknowledging a toast relating to himself, said he did not look on his labourers as mere machines to do set work, but as men possessed of minds, having the same feelings as himself, and immortal souls.

BOOK REVIEWS

**** Books reviewed in these columns may be obtained on application to the Book Dept., "The Builder," 4, Catherine-street, Aldwych, WC2. Cash (which should include 1s. to cover postage and packing) should accompany the order.*

THE CONVERSION OF OLD BUILDINGS INTO NEW HOMES FOR OCCUPATION AND INVESTMENT. By C. Bernard Brown, LRIBA. (London.: B. T. Batsford, Ltd.) Price 45s.

ANYONE who is thinking of altering an old building to meet modern needs should read Mr. Bernard Brown's copiously illustrated book. The author writes of this business of conversion with a missionary zeal. He generously hands on an extensive knowledge of this rather specialised kind of work. Happily he is equally generous with warnings of the many traps and pitfalls that lie in the path of the unwary. Only too easily the amateur's unguided attentions may end in a catastrophe—structural, financial or both. Knocking a wall down here and a door through there as the fancy goes—how familiar we are with the enthusiastic purchaser's proposals—is no way to go about it. Mr. Brown stresses the importance of the reasoned sequence of events, of careful consideration of every step in a necessarily deliberate process.

In the same orderly way this book is divided into five parts and each part deals with a particular aspect of the business in hand.

Part I discusses the essentials of conversion: the search for the right building, professional help, finance, planning, the services—sanitary, lighting, heating, refuse—and precautions against the risk of fire. There is a special chapter on basements, those unpleasant places which, as Mr. Brown so adequately shows, can be turned by skill into something very different and for which he has coined a new and happy term, "The Garden Floor."

Part II concerns the particular problems of converting a building for occupation by the owner. This is perhaps the most attractive kind of conversion to be engaged on. It is, at least, the most personal. An owner may justifiably do things for his own home which he would be unwise to do in homes for other people. As Mr. Brown sardonically remarks in his third part, on Conversion for Investment, tenants are very pleased to have the advantage of such things as sound-proofing and central heating but they will not pay for them.

Conversion for investment is fraught with dangers. The would-be investor is advised to acquaint himself with all of them before embarking his fortune on a very stormy sea. It will not be Mr. Brown's fault if the investor is involved in complications from which it would be difficult to extricate himself. He has been warned. Not every building lends itself to this kind of conversion. It should have for assured success some special quality of character or situation. On the financial side Ministerial grants are available for help. Local authorities are empowered to lend. Grants are generally 50 per cent. (up to £400) of the cost of improvements to each dwelling. For buildings scheduled as being of some outstanding importance this sum may, by agreement, be exceeded. Fortunately it is buildings of just that kind which may prove attractive to a discerning public—to a public, that is, unfortunately limited.

This brings us, in Chapter X, to a problem which the present system of grant-aided conversion does not solve. The 1951 Census revealed that of the 14½m. households in Great Britain over 45 per cent. were below the sanitary level of modern by-laws. The Stockton and Croydon experiments, which have attracted some attention, were both carried out by big industrial corporations. Faced by the continuously rising costs of building work, and the restrictions of the corpus known as the Rents Acts, few private landlords can find even half the capital which conversion would require.

For the investor the conclusion of a satisfactory conversion is not the end of his difficulties. There remain the many problems of maintenance. Part IV deals with these problems at some length, and a number of possible procedures are recorded. It is not unfair to suggest that in some of the outstanding examples, which Mr. Brown describes, the owners have been singularly fortunate in their tenants. It is perhaps doubtful whether the system of shared responsibility, even under covenant, could be indefinitely and successfully extended.

Part V gives a great deal of information about technical and professional services, financial, legal and architectural. It includes a number of model forms of leases, deeds and covenants which have stood the test of repeated application.

This is, in short, a comprehensive work. There are few aspects of the business of converting old houses to modern requirements on which it does not give invaluable advice. Here is a book, it may be said again, which those who are contemplating the conversion of a building, in any one of many ways, should unquestionably secure.

J. B.

MATERIALS AND METHODS IN ARCHITECTURE. Edited by Burton H. Holmes. (London: Chapman and Hall.) Price 80s.

THIS book, an American one, consists of over 400 pages of technical articles selected from the pages of "Progressive Architecture." They are all by experts, and cover not only developments and improvements in structural techniques but also the progress made in the uses of new and old materials and in many aspects of engineering services such as heating, lighting and equipment. The book, which is profusely illustrated by photographs and technical drawings, does not claim to be comprehensive but it provides an impressive insight into current building practice in the United States.

G. J. H.

THE CONCISE LAW OF HOUSING. By W. A. West, Barrister-at-Law. Pp. xx, 192. (London: The Estates Gazette, Ltd.) Price, 32s. 6d.

THE law of housing in England and Wales is to be found in a considerable number of statutes and in other legislation. The principal Act is still that of 1936, but it has been drastically amended particularly by the major Acts of 1949 and 1954. There are also some lesser-known statutes such as the Local Government (Miscellaneous Provisions) Act, 1953, and (as seems inevitable in these days) there is the usual mass of statutory instruments.

Mr. West has therefore done a useful piece of work in providing a handy guide to the law of housing. In 184 pages of text he has effectively epitomised the statute law and cited 87 decided cases. He also gives the essential provisions of certain Ministry circulars which may be regarded as quasi-legislative in effect—for instance, the requirements as to the structural condition of houses qualifying for improvement grants. The text is in narrative form, the subject matter being arranged in 40 chapters of comparatively short length. The arrangement of the chapters is generally convenient, but it is unfortunate that sections 11 and 12 of the Housing Repairs and Rents Act are dealt with, in a miscellaneous chapter, under the sub-heading of "Houses let in lodgings"; these sections confer important new powers on local authorities for dealing with houses in multiple occupation and are by no means confined to houses let in lodgings. It is also odd to find the provisions of the Housing Repairs and Rents Act as to the retention of unfit houses relegated to a chapter headed "Temporary Legislation"; it would have been more appropriate to have dealt with these provisions in the group of chapters on the powers of local authorities to deal with slum properties.

These, however, are minor blemishes. The author is to be congratulated on a painstaking effort which provides an admirable summary of the law. The price charged by the publishers, however, seems excessive.

A. E. T.

BOOKS RECEIVED

CONCRETE MATERIALS AND PRACTICE. 2nd Ed. By L. J. Murdock. (London: Edward Arnold (Publishers), Ltd.) Price 40s.

OFFICIAL ARCHITECTURE AND PLANNING YEAR BOOK, 1956. (London: Chantry Publications, Ltd.) Price 15s.

YEAR BOOK OF THE HEATING AND VENTILATING INDUSTRY. (London: Technitrade Journals, Ltd.) Price 8s. 4d. post free.

CARPENTRY. 2nd Ed. Building Craft Series. By W. B. McKay. (London: Longmans, Green and Co.) Price 10s. 6d.

HILL & REDMAN'S COMPLETE LAW OF LANDLORD AND TENANT. 12th Ed. (London: Butterworth & Co. (Publishers), Ltd.) Price 117s. 6d.

THE TECHNOLOGY OF CEMENT AND CONCRETE. Vol. 1. By R. F. Blanks and H. L. Kennedy. (London: Chapman and Hall.) Price 88s.

DESIGN OF PRESTRESSED CONCRETE STRUCTURES. By T. Y. Lin. (London: Chapman and Hall.) Price 92s.

HANDBOOK OF ENGINEERING MATERIALS. By D. F. Miner and J. B. Seastone. (London: Chapman and Hall.) Price 140s.

ANALYSIS OF STRUCTURES. By M. Smolira. (London: Concrete Publications, Ltd.) Price 18s.

CHEST CLINIC DESIGN—REPORT OF THE NAPT ARCHITECTURAL COMMITTEE. (London: National Association for the Prevention of Tuberculosis.) Price 12s. 6d.

TEACH YOURSELF FORESTRY. By T. A. Robbie, BSc. (London: English Universities Press, Ltd.) Price 6s.

BUILDING TECHNIQUE FOR DOMESTIC AND SIMILAR STRUCTURES. By Edwin Gunn, ARIBA. 3rd Ed. Revised by J. Brandon-Jones, ARIBA. (London: Iliffe and Sons, Ltd.) Price 21s.

THE LACED VALLEY

An Adventure in Construction

By JAMES BURFORD

OF course, we ought to have known all about it a long time ago but somehow or other we had never encountered the problem before. Our studies had passed it by and the knowledge had escaped us. We were repairing an old tithe barn, properly scheduled and listed as a Building of Historic Importance. We began at one end and worked along the length of the building, truss by truss, until we reached the porch. That was where the question arose. A misguided Victorian had made a valley where the porch roof joined the roof of the barn. It was one of those open affairs made with sheets of zinc. It looked dreadful. It leaked horribly; the state of the timbers below it was evidence of that. We thought the porch roof should seem to grow easily and naturally from the great roof of the barn to which it belonged, without any hard line of junction or demarcation at all. That it should be waterproof, too, went without saying. By remembered accounts and common consent a " laced " valley would give us all that we wanted. But we were faced by the lamentable fact that none of us knew how to do it. " I've got a general idea," some of us said, but no one liked to say what it was; after all, he might have been wrong. In the end it was left to me to find out, not only the general idea but all the details as well.

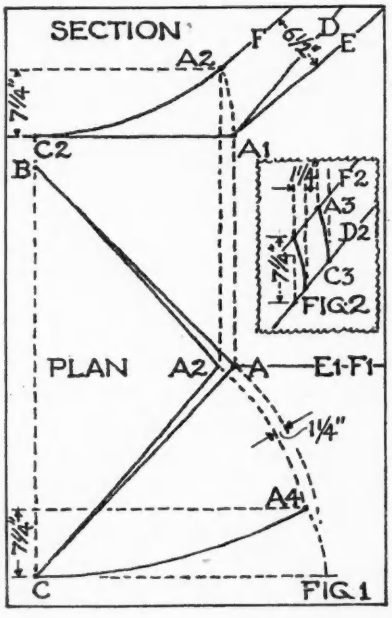
I think I should mention before going further with these technical reminiscences that a laced valley and a swept valley are two entirely different things. A swept valley is used with slates, particularly stone-slates. Three slates and two slates in alternating courses are cut with converging sides. There is nothing in that to which the slates would object. They have to be cut in any event and it is as easy to cut them one way as the other. The line of each course goes horizontally round the angle of the valley. But tiles do not take kindly to being cut, apart from the labour and expense. They depend for their value on their hard-burnt surface. They are too small to be made smaller. The laced valley is a way of turning the angle between one roof and another with ordinary plain tiles, without purpose-made ones, without cutting and without lead or other metal. Each course rises as the valley is reached and, as it were, inter-locks with its opposite neighbour.

Reconnaissance

My task, then, was to find out how it was done. I began by reading all the text-books I could borrow. They treated the matter with cavalier indifference and left me where I was. Then came Mr. Edwin Gunn's informative publication on " Little things that matter." Things began to move. He gave an exemplary sketch of the battens and the tiles but only, so to speak, " amidships "; I wondered what happened at the eaves and ridge. The actual valley course, I learnt, should be in ordinary tile-and-a-half tiles laid left- and right-hand alternately up the valley. " The valley is first firred up to an easy curve, sufficient to allow the battens when laid, with a natural sweep, to meet with a right-angle in the plane of their upper faces." I was sure Mr. Gunn knew exactly what he meant. I was equally sure that I did not.

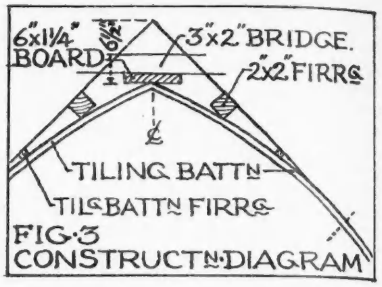
Tactics

The next step was some practical experiment. The carpenter made me a model of the valley with two pieces of wall-board, and cut me a bundle of model battens. Unfortunately none of my battens produced a natural sweep, and the firring refused to help me with the easy curve. But, none the less, I found out what Mr. Gunn meant. The last part of his sentence could read,



perhaps more explicitly, " . . . the battens are laid to meet at a right-angle on a plane parallel to that of the valley." So I went to the drawing board and worked it out. Fig. 1 shows what happens.

In the plan, BAC is a right-angle, AB lying horizontally along one roof and AC horizontally along the other. AEi is the valley line. In the section, AiC2 is the sectional view of the triangle BAC. Line D is the actual slope of the roof (in this instance 50 degs.). Line E is the actual slope of the valley. Whilst points B and C of the triangle BAC are kept stationary the plane of this triangle is curved upwards, with an even curvature, until its tangental continuation (from A2) will give a line F parallel to the valley line E. Line F is the position of the new plane to be formed by



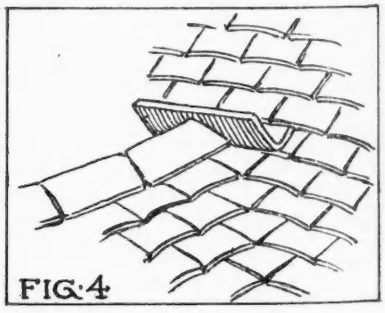
firring over the valley, that is, the plane on which the battens when laid will " meet at a right-angle on a plane parallel to that of the valley."

The dimension of AB (or AC), the length of the portion of the batten to be curved, is arbitrary. It is taken here at 2 ft. 6 in. If this dimension is too short, the tiles when laid will have wedge-shaped gaps between them; if too long the curvature will be disproportionate to the size of the roof. (The roof of the porch spanned 12 ft. 6 in., that of the barn 25 ft.) The new valley plane F is about 6½ in., measured at normal, above the valley line E. The vertical rise of the battens is about 7¼ in.

The point A (Ai) in moving upwards also moves slightly outwards, or away from the roof plane, about 1¼ in. This is seen in Fig. 2 (inset with Fig.1), where D2 is the true section-line of the roof, F2 the centre line of the new plane parallel to the valley, and C3A3 the rising line of the batten. The actual curvature is slight and is shown in true elevation as CA4 in Fig. 1.

Fig. 3 shows a diagram of construction. Bridges, 3 in. x 2 in., cross the valley from rafter to rafter at convenient intervals and a 6 in. x 1¼ in. board is laid on them from top to bottom of the roof. Firring battens, 3 in. x 2 in. or 2 in. x 2 in., are laid over the rafters and parallel to the valley board to support the tiling battens; the tiling-batten firring, further from the valley, can be included in the same way and for the same purpose.

The ridge-board is firred up to coincide with the curvature of the battens and then continues tangentally until it meets the main roof. The top course of tiles should be parallel to the ridge. But as the battens in rising also move outwards, as we have seen, by about 1¼ in., there would be a corresponding error at the ridge course if the graphic calculation were rigidly followed. To avoid this error, once the position of the eaves battens has been



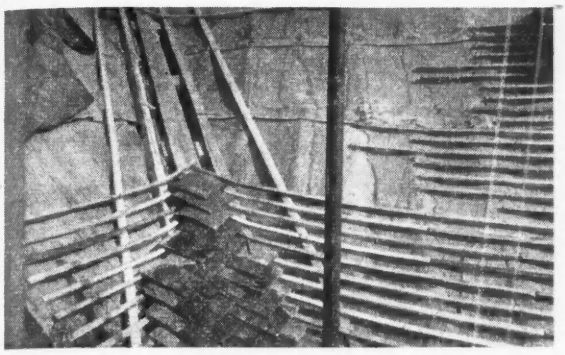


Fig. 5

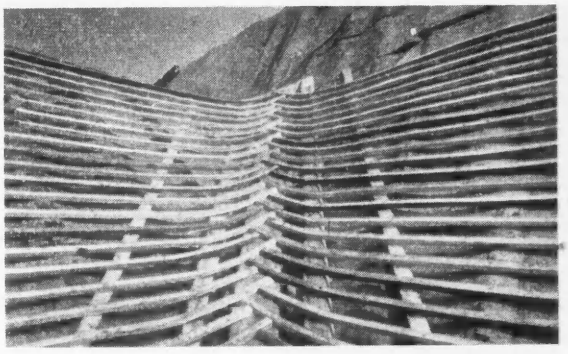


Fig. 6

fixed, the centre line of the valley board from the lowest batten to the ridge can be divided into the same number of equal parts as there are courses of tiles on the roof. The error in each course at the valley will be negligible when spread in this way but serious if concentrated at one point. After the valley has reached the ridge there will be three or four courses of tiles on the main roof which will pass over the ridge board with a slight and continually decreasing curvature until the normal plane of the main roof is resumed. Fig. 4 illustrates a practical method, with an inverted ridge tile, of making a waterproof connection at the inner end of the ridge.

Victory

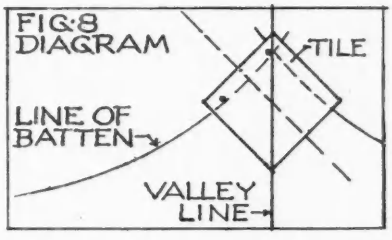
The photographs record different stages of the work. Fig. 5 shows the firring arrangements and some of the battens. The tiler was trying some tiles in position to convince himself that the method really worked. In Fig. 6 the battens and the ridge-plate are completed. It should be noticed that the battens cross over, two to the left and two to the right. This is to give the alternate left and right-hand fixing to the tile-and-a-half tiles. Fig. 7 shows the finished valley.

As the carpenter said: "It's simple enough—when you've done it."

* * *

What I have written is intended to explain the theory of the method. If the theory is that the battens should meet at right-angles as described, then it is inevitable that the battens in curving upwards should also curve outwards. This outward curve causes an error at the ridge and the error has to be eased out.

In practice the battens can be curved in a vertical plane only and the error at the ridge is avoided. This curvature on a



single plane means that the battens will meet at a slightly acute angle. As, however, the two peg-holes of the tile-and-a-half tile will lie on an arc of the curve, it will be found that the tile will lie diagonally and correctly on the centre line of the valley-board. This is shown by the diagram in Fig. 8.

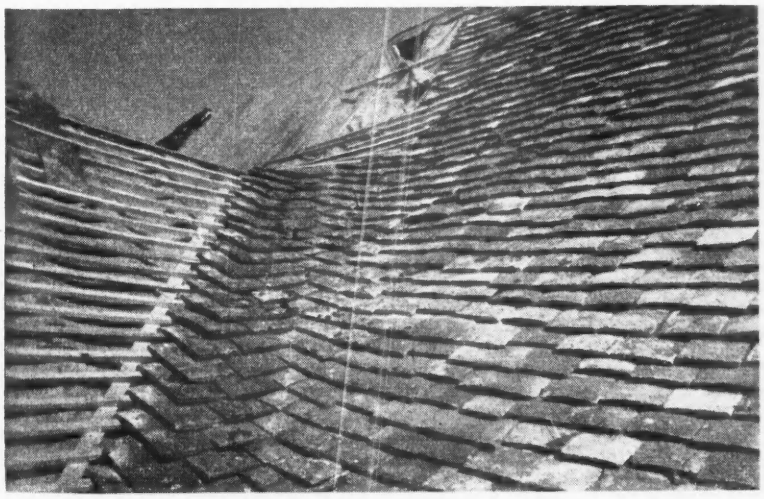


Fig. 7

AGEING IN INDUSTRY

Nuffield Foundation's Investigation

THE steady increase in the expectation of life and the current labour shortage have combined to bring about a new attitude towards the employment of elderly people. The whole subject has been under investigation for some time past by the Nuffield Foundation, under whose auspices a book entitled "Ageing in Industry," by F. le Gros Clark and Agnes C. Dunne, has just been published.* The inquiry, which is based largely on figures derived from the Census reports, deals with thirty-two occupations, including carpenters and joiners, bricklayers, plumbers and plasterers, as well as others closely related to building, such as constructional engineers and makers of bricks, tiles and pottery.

The report estimates that, all told, about 40,000 men in their mid-sixties need to be provided with lighter work each year. In the case of the building trades some of these become foremen or set up on their own as small or jobbing builders, while many gravitate naturally into maintenance and repair work. Conditions, of course, vary in different trades, but apart from sheer physical incapacity there appear to be few reasons why a high proportion of older men should not find suitable less exacting employment. The book provides a wealth of statistical and general information and commentary that should be helpful to all who are interested in or affected by this problem.

To most people the two chief incentives to working after the retiring age has been reached are interest and financial gain, and the latter has often to be measured against the deductions made from State retirement pensions where earnings exceed £2 per week. It is difficult to understand why any restrictions should be imposed. If elderly people are able and willing to work, particularly at a time of acute labour shortage, it seems absurd to introduce any artificial impediments to the fullest possible activity. Some investigation of this aspect of the matter by the Nuffield Foundation might be helpful.

* The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, NW1. Price 6s. 4d. post free.

CORRESPONDENCE

Church Design

To the Editor of *The Builder*

SIR,—To men of an older generation it is a pleasure to see a building thoughtfully designed and carried out in a manner compatible with traditional materials and craftsmanship such as Bawdeswell Church, Norfolk, illustrated in your issue of January 6, by Mr. J. Fletcher Watson, ARIBA. The villagers of Bawdeswell are to be congratulated in possessing a little gem of modern architecture.

How different from the designs of modern churches to be built in concrete for the new parishes in the Diocese of Coventry, shown in *The Builder*, December 16 last! If one can judge by the illustrations they appear to be stark, devoid of religious atmosphere, and more reminiscent of pithead buildings than Christian churches.

HOLLAND W. HOBBISS [FRIBA].
Birmingham.

Retention Moneys

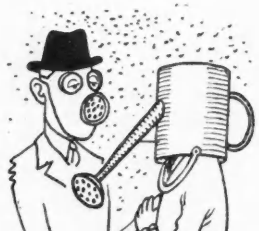
To the Editor of *The Builder*

SIR,—Your issue of December 2 reports (p. 973) a proposal by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders that " in the case of reputable contractors chosen, for example, by selective tendering " architects might reduce the percentage of retention money substantially below 10 per cent.; and the agreement of the RIBA Practice Committee thereto.

This Federation, as the only organisation which, so far as we are aware, advocated three years ago in its evidence before the Inter-Departmental Working Party the abolition of the Retention Money System, is naturally in sympathy with the general purpose of the proposal. Is it, however, practicable to recommend architects to assume the invidious responsibility of making the retention in some cases but not in others?

I am, also, constrained ruefully to point out that on the proposal the percentage which sub-contractors — even those selected and nominated by the architect himself—must submit to have retained is apparently to be governed by the reputation of another firm. The committee would do better to recognise that the retention system ill suits modern contracting conditions and should, if abolition is not yet feasible, be substantially reduced without qualification.

P. C. FORD,
President, Federation of Associations of Specialists and Sub-contractors
Artillery House, Artillery Row, SW1.



" Naturally, one can't do much gardening with all this smog about!"

Case for the Half-brick

To the Editor of *The Builder*

SIR,—Your correspondent, Mr. Campbell, in his letter last week has entirely missed the point of the idea of half-brick. If they were made, as I suggest, exactly like a full-brick, except for being halved, they would naturally have four smooth sides. The idea of breaking bricks in half and then laying them does not make sense. What sort of joint would you get with a broken brick ?

With regard to Mr. Campbell's remark that if laid header-fashion and short or ragged, the wall is not 4½ in., well, of course, that is the very point. The purpose-made half-brick means you would have equal and regular faces on both sides of a 4½ in. wall. As to his last paragraph, I thought the idea was to assist building, not bookkeeping. As to who is going to pay, ask the architect who likes a good neat job!

G. W. HARRIS,
43, Leopold-road, NW10.

OBITUARY

Robert Bennett, FRIBA

WE REGRET to record the death at The Lister Hospital, Hitchin, Herts, of Robert Bennett, FRIBA. Mr. Bennett who lived at Hall Barn, Letchworth, was 80.

Rees Phillips, FRIBA

MR. REES PHILLIPS, whose death was briefly reported in our last issue, was a leader in the field of hospital design, and in partnership with Mr. A. Saxon Snell had built a large number of important institutions, including Whitehaven Hospital, East Dulwich, Brompton, Redhill County and St. Helier hospitals. After Mr. Saxon Snell's retirement in 1941, Mr. Phillips designed a number of war-time hospitals and military camps. In 1945 he was invited by the Colonial Office to advise on hospital development in Nyasaland and Uganda. In 1948 he won a limited competition for a European Hospital in Bombay, and the next year took his son, Mr. P. R. Rees Phillips, ARIBA, AADipl, into partnership; at the time of his death the firm were supervising major works at the Brompton, Maudsley, Brighton, Lewisham and Chesterfield Royal hospitals, amongst others.

Born in 1890, Mr. Rees Phillips was educated at the City of London School and the AA, being articled to Mr. A. Saxon Snell in 1909. He was elected ARIBA in 1913 and Fellow in 1926. He served in the RAMC in the 1914-18 war. Since 1952 he had been a member of the RIBA Hospitals Committee and, since 1943, had represented the RIBA on the MoW Codes of Practice Committee for Sanitation. He was FRSanI and for many years had examined for that Institute.

RIBA PRIZES AND STUDENTSHIPS

Awards for 1956

THE awards of the Juries for the RIBA Prizes and Studentships for 1956 were made known on Tuesday evening at the RIBA as follows:

The Tite Prize, a Certificate and £100: 127 candidates took part in the Preliminary Competition, and of these 11 were allowed to proceed with their final drawings. The prize is awarded to Michael B. Everitt (Leicester College of Art School of Architecture).

A certificate of Honourable Mention is awarded to Miss Alison J. Ross (Aberdeen School of Architecture).

The Soane Medallion and £120: 125 candidates took part in the Preliminary Competition, and of these 13 were allowed to proceed with their final drawings. The Jury recommend that the Soane Medallion and £120 be not awarded.

The Pugin Studentship, a Silver Medal and £80: Awarded to J. M. Warnock (Student) (Birmingham School of Architecture).

The Owen Jones Studentship, a Certificate and £250: There were three entries. The award is made to Kenneth A. Williams, ARIBA (Northern Polytechnic.)

The RIBA Silver Medal for an Essay and £50: There were five entries. The Jury recommend that the RIBA Silver Medal and £50 for an Essay be not awarded, but that Certificates of Honourable Mention be awarded to Peter W. T. Kilby (Manchester University.) and Maurice J. Brown, DA (Edin.), ARIBA.

The RIBA Alfred Bossom Research Fellowships for Post-Graduate Research: There were four entries. A Fellowship of £250 is awarded to Mr. E. S. Benson (F).

The RIBA Rose Shipman Studentship Trust: There were seven entries. A Rose Shipman Studentship of £400 is awarded to Mr. W. A. Gibbon (A).

The Godwin and Wimperis Bursary: A silver Medal and £300: No applications received.

The Grissell Gold Medal and £35: There were three entries. The award is made to Peter Robinson (School of Architecture, Dundee College of Art).

The Henry Saxon Snell Prize and Theakston Bequest, a Certificate and £150: There were four entries. The award is made to Mr. Raymond Moss (A).

The Hunt Bursary, Certificate and £95: There were two entries. The Bursary is awarded to Mr. T. K. McCann (A).

The Arthur Cates Prize, Certificate and £115: Two essays were submitted. The prize is awarded to Mr. R. I. Savidge (A).

RIBA Prizes for Public and Secondary Schools for Essays: One essay was submitted. A prize of £2 2s. is awarded to C. J. Hewett, The College, Bishop's Stortford, for his essay on St. Peter's Church, Petersham.

For Sketches, six entries were received. Awards are made as follows: Prize of £4 4s. to D. E. Tuckley, Northampton Grammar School, for drawings of Fotherinhay Church; Prize of £2 2s. to Christopher Shurrock, Bristol Cathedral School, for drawings of The Coopers' Hall, Bristol; Prize of £1 1s. to M. C. Thurgood, Slough Grammar School for Boys, for drawings of St. George's Chapel, Windsor; Prize of £1 1s. to C. F. Jackson, Whitehaven Grammar School, for drawings of Pelham House.

The RIBA Athens and Delissa Joseph Bursaries, Certificate and £175: Awarded to Mr. Evelyn Freeth (A).

The Henry L. Florence Bursary, Certificate and £400: Awarded to Mr. R. E. McCaughan (A).

The Andrew N. Prentice Bequest, Certificate and £230: Awarded to Mr. J. A. Wells-Thorpe (A).

"The Motorway and Its Environment"

A RIBA LECTURE

THE conditions and problems involved in providing motorways in Great Britain were outlined on January 10 by Sir E. Owen Williams, KBE, MICE. He was presenting a paper entitled "The Motorway and its Environment" to the RIBA, 66, Portland-place, W1, from which the following extracts are taken:

Before embarking upon any theory or suggestions as to what may be done to or with a motorway, one must first consider its planning conditions and character.

So far, the usual type of road is on ground level intersecting other roads on the same level and open to all classes of traffic. The motorway is associated in most minds with fly-overs, i.e., separation from all other intersecting roads, and probably that single feature is the distinctive characteristic of the motorway and its greatest influence on environment. The motorway is intended exclusively for mechanical traffic and the fly-over facilitates its control. The fly-over also achieves a higher degree of road safety, but—what is not generally known—it is under certain circumstances an economy. The cost of a fly-over taken by itself may seem extravagant, and generally that is accepted on the score of safety and speed. In point of fact, the fly-over will increase the traffic efficiency of the motorway by anything from two to three times, whereas the cost of providing fly-overs as against level crossings adds only one-third to the total cost of the motorway. From this it follows that for high intensity traffic, which would be the only justification for building motorways in this country, all new motorways should for efficiency and overall capital cost have fly-overs. This of course does not apply in countries of low traffic intensity such as Canada. The necessity for fly-overs in this country is emphasised as it has a profound influence on the environment, calling for embankments and cuttings to negotiate the existing traffic routes.

Straightness Not Vital

We all know that the straight line between two points is the shortest, but fortunately even a comparatively large departure from the straight line does not add so much to the distance. A motorway cannot be in a straight line owing to natural and artificial conditions and it is interesting to consider how much it can depart without detriment to the user. Existing routes between any two points in this country are generally 12½ per cent. longer than the straight or "crow-flying" line. To increase the distance between two points by 12½ per cent. allows a total deflection laterally from the straight line of about 25 per cent. of the length of the route. If you make a half-circle connecting two points, that is to say a 50 per cent. departure from the length, there is an increase of approximately 50 per cent. on the mileage. Generally, up to 12½ per cent. increase in route length may be termed "direct"; after that it may be "circuitous."

Experience on by-passes shows that any material increase in distance between two points on a new route is disastrous to its use. For example, a by-pass making a half-circle of a town has proved to be little used. Existing roads or their tracks were there first and everything has grown up around them. Their 12½ per cent. increase in length over the "crow-flying" line was caused by natural conditions. The motorway comes in when the existing roads have already occupied the best positions and has to be fitted into a country well built up. Therefore there is a pressure to make them tend towards the circuitous—which would be against the value of the motorway. The motorway must therefore struggle hard to get a route which is certainly not longer than the existing road and this is a definite limitation to the choice of route. In general, the motorway should keep as near to centres of population on its route as possible, right up to the limit of their likely development but not so as to make too big a detour for this purpose if it alters the distance between the terminals by materially more than 12½ per cent.

Gradient Differences

Another condition is the reduction of up and down gradients. If the two ends of the motorway have, say, a natural actual difference in level of 500 ft. this must, of course, be climbed. The sum of all the up-gradients—which is termed "the ineffective rise," i.e., beyond the necessary climb—must be kept down to a minimum and certainly must not be more than what is found on the existing roads, which again have the advantage of the best positions and without any fly-overs to negotiate.

These two factors of "directness of route" and "minimum climb" restrict the choice of the route and in a country such as ours, which is comparatively flat and without great natural obstructions, they can become the governing conditions, whereas in mountainous or otherwise obstructed terrain pure engineering conditions control.

Now why is it necessary to enumerate these conditions when dealing with environment? It is these conditions which influence the environment and it will be influenced more or less according to the density of population in various countries. To impinge on the conditions, the value of the motorway may be seriously impaired, even made useless, so that it cannot be pushed about all over the map for any light reason. This country is essentially high density built-up with about one person per acre compared with, say, British Columbia with 200 acres per person and where the roads may have one house per 100 miles. We here, in contrast, have as many as 100 land interests per mile or even more. Maintaining natural and artificial drainage, roads, railways, canals and—not to be forgotten—footpaths and avoiding as far as possible the cutting of farmland and other properties becomes of paramount importance.

The motorway with fly-overs not connected with the existing roads may easily become, so to speak, a dam or barrier cutting the country into sections only to be countered by ample access under and over; maintaining roads, footways, farm tracks, and all other services in a country like ours can result in two or three bridges per mile, whereas in a low density unbuilt-up country there is more likely to be only one bridge every 20 or 30 miles.

Problems of Land

It is necessary to have a broad view of environment before getting to the details of its treatment, but apart from subsequent treatment it is as well to emphasise what the route of a motorway in this country means as a land problem. With a dictatorship presumably the motorways could be started at any time, although not necessarily in the right places, as has been proved elsewhere. Democracy demands consideration of all interests, large and small, and this takes time. It is seldom found that anyone finding the motorway passing even at the bottom of his garden joins in the demand for immediate action. On the other hand, those who are in no danger of this are loud in their demands for rapid action. Ministerial inquiries for the protection of these interests may seem long drawn out, but what is the alternative? Is it better to save time at the expense of sacrificing individual interests?

With this broad view of environment, some line can be seen of achievement and treatment. Individuals picture the motorway narrow or wide according to their knowledge or imagination. It is in fact no narrow ribbon. It is something over 100 feet wide, about four or five times as wide as the average existing road, plus width of embankments—and that must be pictured first. Having fly-overs, and having the added difficulty of being last in the field and therefore having to take the more difficult lines, and with the need to minimise ineffective rise, the motorway is largely either on embankment or in cutting, indeed it may be about half of each. The motorway user may travel up to a half of his time between banks of varying heights. It is the treatment of these embankments and cuttings which is the most important visually, both to the surrounding population and to the user of the road. If the cutting is in rock—unusual here—the almost perpendicular face is practical and not unpleasant, but if the cutting is—as is more usual—in clay or something similar, the banks will slope about 30 degrees. If they are made steeper they will not be stable, and anything flatter is not permissible from the point of view of cost and the waste of land. These sloping banks are not so fearsome when in comparatively shallow cuttings but can be most unpleasant in deeper cuttings, say 30 to 50 feet.

There is a good engineering case for flatter slopes in the deeper cuttings and this can be achieved by the simple expedient of using a flatter angle, but there is a

preferable method of obtaining the object of flatter slopes, namely, by using the same slope of 30 degrees interrupted at various heights by narrow platforms or shelves, usually termed "berms." These are useful for the maintenance of the slopes and trees can be planted on them and so act as some protection against slides and erosion due to the drainage on long slopes. The slopes of great depth will therefore be broken up by shelves with clumps of trees, increasing their pleasantness to the road user. Embankments supporting the road should be treated in the same manner, and indeed there is a greater engineering need here for the shelves or berms which would give the same relief to the surrounding population.

There is one aspect of road planning little known generally as it is a comparatively recent development; this is known as "flowing alignment," which may be defined as the correlation of the vertical and horizontal curves of the road surface, the object generally being to have the tangents of both curves coinciding, thus relieving the road user of disjointed perspectives. This is undoubtedly a valuable influence on his environment, giving sweeping lines without "kinks," and is an important factor on the siting of the motorway. However, it must not be carried to extremes as it can then be very restrictive on siting and lead to very heavy earthworks. It is clear that the minimum amount of earthworks causes the least present and ultimate disturbance to the countryside. If the country were dead level there would be, even so, a considerable amount of earthworks to go up or down over fly-overs every half-mile.

Twin Carriageways

The motorway itself is divided by a central reserve so as to form two carriageways, and on the central reserve with the planning necessity for minimising the distraction of oncoming headlights there would be detached clumps of bushes which the planning necessity allows to be fairly widely spaced, achieving their object without a continuous hedge and with greater satisfaction to the road user.

There are two definite credits to be given to the motorway in its general influence on the countryside. By its complete limitation of access there can be no question of any development, ribbon or otherwise, alongside it. But there is an even more valuable positive advantage to look forward to. The motorway will attract the heavy and fast traffic from the existing roads and return them, to a large extent, to a more reasonable and quiet use. It would tend to remove the nightmare of heavy and fast traffic thundering through built-up areas.

The environment of the motorway is everything touching the lives of the people on it or in its vicinity, increasing in difficulty with the intensity of population. It is the task of weaving an immensely wide ribbon across an already tangled web and the equipment for this is tact and understanding rather than the bulldozers and mixers.

There must be no copying. It is little use looking at what has been done elsewhere. To be fitting, the result must fit the particular conditions, which vary everywhere, and the philosophy must be faith in necessity. To the task of achievement there must be applied the universal principles of design; not what it looks like just when it is finished but after it has settled down. In a building this may be a year or so of its life, but for a road it is a matter of what it will be in 20, 50 or 100 years. When some explorers 150 years ago saw the Rocky Mountains they were at first appalled at the difficulties confronting them, and what one of them wrote in his diary would be a good reflection for those that fear the motorway: "As I have always held it a crime to anticipate evils I will believe it a good comfortable road until I am compelled to believe differently."

BIRMINGHAM SCHOOL OF ARCHITECTURE

Students Protest at Transfer to Technical College

STUDENTS of the Birmingham School of Architecture are opposed to the transfer of the school from Margaret Street to the new College of Technology in Gosta Green, recently opened by the Queen.

"We believe," said their spokesman, Mr. J. P. Hartley, president of the school's students' committee, "that, given some relief from the present overcrowded conditions, no better environment exists in the city for the study of architecture than at Margaret Street and that no building or place could be more incompatible than Gosta Green. We feel very strongly on this matter.

"The plan to move the school with other departments of the College of Art and Crafts into the new College of Technology seems a bad one in many ways," Mr. Hartley continued. "We believe that architectural education is more than a training in a particular technique. By tradition it is an art. Although we know that today an architect is no less a scientist and technician than an artist, we also feel that an emphasis on technique—which would be difficult to avoid in a technical college not designed for the study of arts—would be harmful.

"Our second complaint is that the situation at Gosta Green is bad for us, compared with the easily accessible Margaret Street, where we are near to such places as the Art Gallery, University and Birmingham Architectural Association, which we visit frequently. It is possible, too, that the visits of University lecturers might become less frequent at Gosta Green. Thirdly, we feel that such a move would affect the prestige of the Birmingham School."

Mr. Meredith Hawes, principal of the College of Art and Crafts, said he was aware of the architectural students' feelings about the move. "No doubt students feel that the College of Art, for all its deficiencies as a building, is well sited in the centre of the city. But it seems to me that architects should be working in close proximity with such courses as interior decorating and textiles and that they must profit from such proximity just as the other courses do from architecture."

Landscape Architecture

PRESIDENTIAL ADDRESS AT THE ILA

MR. RICHARD SUDELL, FILA, delivered his presidential address to the Institute of Landscape Architects on the subject of "Landscape Architecture: The Next Twenty-five Years." Among the points made by Mr. Sudell were the following:

Until the ILA came into existence there was no public course of instruction or method by which a person could become a landscape architect except by working with a firm engaged in landscape construction. The first president of the Institute, Thomas Mawson, had a system of taking pupils which gradually grew into a small school and it is interesting to note that quite a number of members of the Institute had their early training at this private school.

During the past ten years the work of the ILA in promoting courses of instruction at various universities is beginning to bear fruit. Persons have been trained and are now in practice in various parts of the country and also one or two have found their way into the colonies.

Practice in Britain

The question arises as to what method of education and expansion should we adopt for the future. It will be clear to everyone that the field for the practice of landscape architecture is limited in the British Isles. As I see it the practice of landscape architecture will become more and more the province of the local authority. Already a considerable number of our members are engaged on works in connection with local authorities and a few find themselves in the chief administrative positions where they are responsible for the design and landscape work in their area. But in parks departments they have the added duties of administration and the actual work of surveying, design, and the preparation of landscape schemes must, under the large authority, be left to assistants under the direction of the chief parks officer. There is still a wide scope in this field for fully trained landscape architects, but in my view they will always be subordinate unless they achieve the chief positions as administrative officers.

In the field of private practice, there is considerable opportunity in connection with commercial undertakings of all kinds; factories, mineral works, roadways, and I am sure there is the need for consultant landscape architects in connection with the new atomic plants that are now being planned in various parts of the country.

In connection with housing projects of all kinds, estates, new towns, etc., there will, of course, be plenty of scope for landscape architects. There is a big field, too, I think, in connection with the rebuilding of slum areas in our big cities. There are big projects under consideration to clear whole areas of dilapidated and worn out property and to build tall blocks of flats, horizontal blocks, with

some cottages in a form of mixed development. In this way the landscape could be brought back into our big cities in the form of public gardens, children's playgrounds, and possibly a few private gardens and allotments for such persons as care to cultivate them.

The national parks also offer a limited field for landscape architects operating under the county councils and authorities concerned. But our major opportunity, I think, is in the colonies. There are over forty colonies and protectorates all crying out for landscape architects. It would, I think, be quite unfair to regard this entirely as a field for British landscape architects. We should encourage these countries to send students to be trained here in the basic principles of design and construction. They would, of course, need to supplement this with a knowledge of their own plant material. For a time there should be an opportunity for British landscape architects to practise in some of our colonies. The cost of transport is a limiting factor. In this connection our honorary fellow, Lord Reith, agreed to issue a directive to his various offices to the effect that any project which is financed wholly or in part by the colonial development corporation should consider the employment, where necessary, of a landscape architect. Whether he be British or a Colonial will depend on the local circumstances and the availability of trained men, but I do hope that the universities at present giving courses of instruction in landscape architecture will bear this in mind.

"A New Age"

Looking to the future, the present international situation is much more hopeful than for some time past. Landscape architecture and art generally have been disrupted during the past fifty years by two major world wars. If mankind can agree to settle their disputes without the resource of force a tremendous liberation of energy will be set free for positive construction and development. We are, I believe, on the verge of a new age. Science promises clean power, which means that plant growth which was so restricted in the industrial cities will be made possible again by clean and purer atmospheres. Active membership of amateur societies is an opportunity of furthering the ideals of good design in landscape. Societies like the Royal Horticultural Society, the National Allotment Garden Society, the National Playing Fields Association and the Royal Society of Arts, are all rich fields of contact and it is astonishing how much can be done by members to publicise our ideals.

To summarise, we have three things to do: 1. Recruit new members for all classes provided for in the constitution. 2. Continue our education policy and extend the field wherever an opportunity occurs, for example it may be worth while to establish a landscape course in the tropics at Trinidad, where a new university is taking shape. 3. Develop our journal so that we can publicise good examples of landscape design and create better links with contemporary institutes and the public.

Slum Problems In Marseilles

By B. S. TOWNROE, OBE, Hon.ARIBA

WHILE we in Great Britain are on the eve of clearing about 375,000 dwellings, written off as irretrievable slums and to be pulled down in the course of the next five years, housing authorities in France are overwhelmed by the immensity of their slum problem. Recently I visited the city of Marseilles in order to see some of the high flats designed by Le Corbusier, but at the same time learnt something about the local slums. I was informed that 26 per cent. of the dwellings are at least 100 years old if not more.

Public opinion was aroused in Marseilles last summer by the tragic death of a little Algerian boy aged four years old. He was living in a shack within just over a mile of the centre of the city, when a fire broke out in the afternoon of June 13 and one of the worst slum quarters mainly built of wood was completely destroyed. When the ruins were still smoking, a child of four years old, his body completely burnt, was discovered. His family imagined that he was in safety with a neighbour.

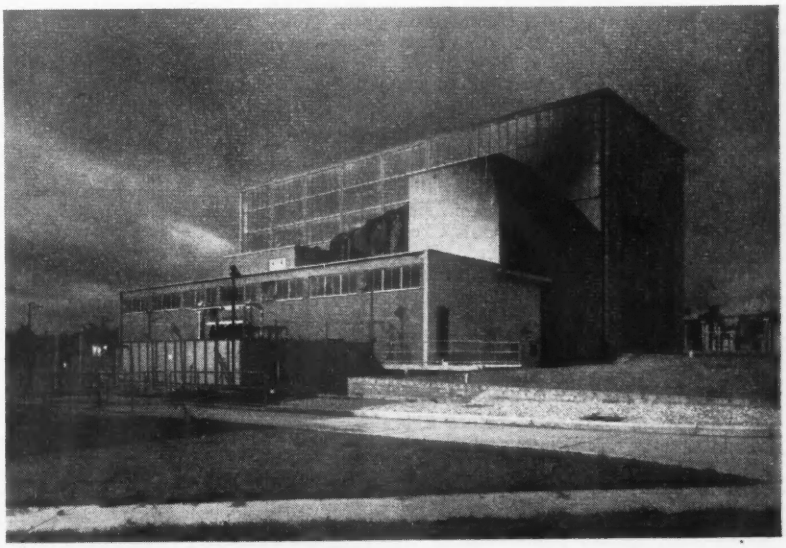
This tragedy dispelled all the official and optimistic statements to the effect that new post-war buildings had solved the problem, and it was found on further inquiries that literally thousands of families were still living under most insanitary conditions.

In Marseilles some of the worst slums I have ever seen are still occupied, while close by are high luxury flats, many of which are unoccupied and empty, because the cost of building is so high that there are neither potential purchasers nor tenants who can afford to buy or lease. This year from across the Mediterranean flow incessantly Arabs from North Africa, and the families forced out of Indo-China. According to the official statistics, Marseilles already contains nearly 700,000 inhabitants, over 100,000 more than in Leeds. It is believed, however, that these figures are on the low side.

Excessive Rents

Rents are usually out of reach of families receiving low wages. Recently a case was discovered of a man from Indo-China with a wife and three children who was paying about three-quarters of his weekly wage for a tiny room. In one of the most respectable boulevards there are many flats with only one w.c. for six families. According to an official survey, at least 26 per cent. of the existing flats now in occupation were built before 1850 and yet the rents are often exorbitant in relation to wages.

Those who knew Marseilles before the war will remember the grim alleys of the quarter near the Old Port. These were destroyed in 1943 by the Germans, and a bad slum area was cleared. But what happened to the fishermen, sailors and the little shopkeepers who once lived there? Actually, few of the former inhabitants are now anywhere near their old homes and the



SHOWN ABOVE is the Admiralty Test House erected as part of the new National Gas Turbine Establishment at Pyestock. Designed by Mr. J. C. Clavering, FRIBA, of the Chief Architect's Division, Ministry of Works, the scheme includes main offices, metallurgical laboratory, workshops, canteen and sports club, as well as two 500,000-gallon reservoirs. Coloured renderings have been used on the buildings to give contrasting effects, and care has been taken to preserve the surroundings. Security fences and police gates are well away from the general view, and "wire-scape" has been avoided. The main contract was carried out by Gilbert-Ash, Ltd.; the reservoirs having been constructed by J. L. Kier & Co., Ltd.

Old Port is to-day covered with splendid modern flats and offices.

It would be unfair to suggest that the housing authorities of such a progressive city are not doing their best, but there are still almost unbelievable conditions. In the former German emplacements are now living nearly 600 families. Prefabricated dwellings have been hastily erected in camps around the town. Even the chassis of a motor car has been propped up with planks so as to form a lodging for an old man.

The City Council, backed up by financial help from the State, have built 588 new dwellings, and 227 are in course of construction, but this is only a trickle compared with what is needed. It is officially stated that at least 40,000 families are in need of a home and every day old houses are becoming more and more dilapidated owing to lack of proper maintenance.

The problem is accentuated by the number of out-of-works and vagabonds, who crowd into this seaport. In one lodging house maintained by a religious community, where free lodging is given for three nights, an analysis has been taken of the 9,000 persons who stayed there in 1954. Something like half of these were of French origin and the remainder were Spaniards, Italians, Belgians or South Americans. Two-thirds were over 40 years of age. Many were ex-servicemen who have returned from Indo-China demobilised after four or five years in the army. The Salvation Army homes, partly for men and partly for women, give the same report of an already overcrowded city becoming more and more congested.

Arousing Public Opinion

A new movement of public opinion on these questions is taking place in all parts of France. When I was in the south of France last October I found that meetings addressed by the Abbé Pierre were being attended by four to five thousand people. He was trying to do all he could to arouse public opinion, as he has already done in Paris, to the deplorable housing conditions in the French provinces. He has behind him the outspoken sympathy of M. Mendès-France.

As far as Marseilles is concerned, it seems to me to be already well provided with better-class flats, like those so ingeniously designed by M. Le Corbusier, but a solution of the slum problem, the magnitude of which is not generally realised by the officials with whom I spoke, may well take another 20 years before it is reached. Nevertheless, public opinion is at last awake to the evils of slums which naturally have grave effects on public health, and provide such a fertile soil for the growth of Communism.

New Towns Progress

The January issue of "Town and Country Planning" (price 2s. 6d., from 28, Kingstreet, WC2) deals with the progress of all the new towns to the end of 1955. Besides facts and figures it contains special articles on such particular aspects as industry, finance, education, social life, playing fields, and the future ownership of the towns.

BOARD OF BUILDING EDUCATION

Independent Chairman to be Appointed

THE second meeting of the Board of Building Education was held at the offices of the Institute of Builders, 48, Bedford Square, WC1, on January 5, under the chairmanship of Mr. F. Leslie Wallis, OBE, JP. The Board has been set up by the Institute of Builders, with the support and collaboration of the National Federation of Building Trades Employers, to advise on methods and standards of technical education and practical training for executive, administrative and managerial positions in building.

The following have recently been nominated by their respective bodies to serve on the Board, and those present were welcomed by the Chairman: Mr. J. Gibson, representing the Ministry of Education; Sir Eric Seal, KBE, CB, representing the Ministry of Works; Mr. D. A. G. Reid, BSc, MICE, representing the Association of Principals of Technical Institutions; Mr. T. E. Hall, DipArch, ARIBA, representing the Association of Teachers in Technical Institutions; Mr. J. H. Mills, representing the National Federation of Building Trades Operatives; Mr. R. E. Enthoven, FRIBA, representing the Royal Institute of British Architects; and Professor J. A. L. Matheson, MBE, MSc, PhD, representing the Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom.

A letter of good will has been received from the Minister of Education expressing his interest in the Board's activities.

The Chairman spoke with appreciation of the gifts to the Institute from the member firms of the London Master Builders' Association to assist in setting up the Board. These have now reached a total of £3,449, and there is already promise of further support from the Regional Federations of Building Trades Employers.

A Steering Committee

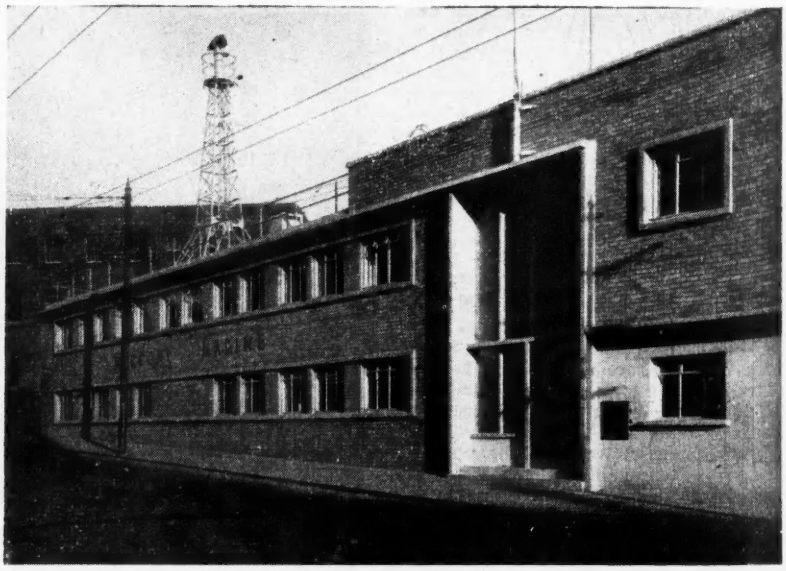
It was decided to appoint an independent Chairman of the Board, and a further announcement will be made shortly. A steering committee was appointed to prepare a suggested programme of work.

The following members of the Board were nominated as representatives to the Building Training Conference sponsored by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders to be held on January 31: Messrs. G. W. E. Airey, MA, FIOB, G. A. Hill, OBE, FIOB, T. H. Huxley Turner, CBE, BSc, FIOB, and W. K. Laing.

HOUSING PROGRESS

The November Figures

THE HOUSING SUMMARY presented to Parliament as White Paper Cmd. 9665 (Stationery Office, 3d.) jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during November was 27,874 compared with 29,315 in November, 1954. In the first 11 months of 1955, 288,545 permanent houses were completed compared with 316,943 in the same period of 1954. Of the November total, 16,064 were constructed by local authorities and 10,962 by private builders.



MARCONI HOUSE, NEWCASTLE UPON TYNE.—A view of the front of the new building for the Marconi International Marine Communication Co., Ltd., seen from Melbourne-street, showing one of the radar scanners on the roof. It is stated that the building marks a considerable step forward in the provision of a marine radio service for the important shipping centres of the north-east coast. The architects were Messrs. F. H. Taylor Son and Bracken and builders Messrs. Purdie Lumsden & Co., Ltd.

COLOUR AND SAFETY

World Congress Held in Rome

AN International Congress held last April in Rome, and organised by the ENPI (The Italian Association for the Prevention of Accidents), was attended by Mr. Robert F. Wilson, Art Director of the British Colour Council, who has made the following report.*

The purpose of the Congress was to enable any organisation, authority or person interested in the prevention of occupational accidents to exchange views and experiences concerning the subjects placed on the agenda.

DR. ING KREMER, of the Federal Republic of Germany, who spoke first, said the machine builder must not limit his thought to the pure technical purpose of his invention. He must also "think of Man because this is the only way in which he can accomplish his moral and social duties, placing at the disposal of mankind safe machines and installations devoid of occupational hazards."

MR. WILSON, who spoke next, emphasised the part that the colouring and design of machinery can and does play in improving the conditions of workers. He stressed the importance of planning at an early stage in order to ensure good lighting and well-considered colour schemes that produce good "seeing conditions." He had found it important to have early consultations with the architect, the civil and lighting engineers, the works manager, and safety and welfare officers on problems connected with achieving the best working conditions. In speaking of some of the difficulties experienced in his work, Mr. Wilson referred to the conflicting colours found in machinery when ordered from different makers and different countries. He suggested that it would be in the interests of planning, if four colours could be recommended by the Congress for international use.

Mr. Wilson then stressed the necessity for advice on colour from people qualified in this subject. He pointed out some of the dangers which arise when unqualified people give advice on these matters. A further danger arose in colour changes, brought about by a difference in the light source. caused by wrong replacement of fluorescent tubes during maintenance.

In later comments Mr. Wilson made a plea for the introduction of colour tests for all adults and also for colour training to be introduced into the education of children so that it might become an aid to safety.

MR. FABER BIRREN, of America, spoke on "Functional Colour for Better Work Production and Safety." He talked of the objectives of functional colour, the causes and results of eye fatigue and gave some of the basic principles in lighting. On the subject of colour standards Mr. Birren's view was "the fewer the better." He said that the US Navy with industrial buildings, shipyards, posts and barracks located throughout the world, had found only 22 colours necessary and that in average shops and plants fewer might suffice. Such standardisation would save large sums in paint manufacture and in maintenance.

MR. H. R. PAYNE, OBE, head of the safety department of Imperial Chemical Industries, Ltd., gave a paper on education and training for industrial safety. He said it was important to differentiate between education, training and discipline. Education as a process, continues throughout life but that there was in addition a special safety education, which must be continuously pursued if accidents and unnecessary suffering were to be avoided. Over the past 30 years the accident rate in our industries employing about 2m. persons had, he said, been reduced by at least 50 per cent. This reduction had been achieved mainly by leadership from senior management, close consultation with the operatives in joint committees, training and retraining, a free exchange of experience between industries and the continuous efforts of safety departments.

* *The full text of the papers given at the Congress can be seen in the Members' Room Library of the British Colour Council, 13, Portman-sq., London, W1.*

The Glazed Cement Manufacturers' Association

A REVIEW OF ACTIVITIES

THE GLAZED Cement Manufacturers' Association was formed by five firms in August, 1954, and the following is a review of its aims and activities from that date until June, 1955:

The five firms are John Ellis and Sons, Ltd., of Leicester; Robb's Cement Enamel Finishes, Ltd., of Vauxhall Bridge-road, London; Quickset Water Sealers, Ltd., of Victoria-street, London, SW1; Modern Surfaces, Ltd., of Blackfriars, London, and Cement Glaze, Ltd., of Wandsworth-road, London. Each company nominated a representative on the council, which first met on August 19, 1954, under the chairmanship of Mr. C. J. Tatham, of John Ellis and Sons, Ltd. The secretaries and treasurers of the Association are Russell Tillett and Co., of 18, St. Swithins-lane, London, EC4.

The objects of the Association are to have a central organisation for businesses manufacturing glazed cement in order to enable the use of glazed cement to be more widely publicised in the building industry, especially among architects, to speak for members in representations to public, local and other authorities, and to collect, circulate and discuss maters of common interest to the members.

The members agreed upon a standard specification of glazed cement finishes. The members feel confident of the future of glazed cement as a permanent wall finish in modern buildings. Many examples of past work over the last 20 or more years testify to the durability of this form of wall surfacing, and discussion in the council during this period centered upon the maintenance of the quality of members' products within the specification, the confusion between glazed cement and cheaper and less durable wall finishes, and the establishing in the building industry of a wider recognition of the distinction between them. Wide discussion took place upon problems met with by members.

British Plastics Exhibition

The fourth British Plastics Exhibition and Convention, occupying more than double its previous amount of floor space, will be held at Olympia, London, from July 10 to 20, 1957. The international convention will run concurrently. This exhibition is organised with the co-operation of the British Plastics Federation by *British Plastics*.

FIXED PRICES FOR TWELVE MONTHS

Brick Company's Promise

THE Cherry Orchard Brick Company, of Kenilworth, Warwicks, which specialises in the making of facing and engineering bricks, and which was one of the first companies in the country to use oil in the firing of its products, is to hold its present prices for the whole of 1956. It has notified its customers accordingly.

Discussing the decision, an official of the company said that while welcoming the decision of the cement and plasterboard manufacturers to stabilise their prices for six months in an attempt to halt the ever-increasing cost of building, they felt that six months was a very short time in the life of the building industry. Few jobs of any size could be completed within six months, and in the case of really big jobs even a year was not over-long. So they hoped that their example, small as they were, might lead other firms to raise their sights and that other industries would follow the lead given by the building industry.

BRITISH STANDARDS

Polyvinyl Chloride Insulated Cables and Flexible Cords for Electric Power and Lighting for Working Voltages up to 250 Volts (BS 2004 : 1955)

THIS REVISION of BS 2004, price 6s., has been published to incorporate an amendment providing for tinned copper conductors, with plain copper conductors as an alternative, to be supplied when specified by the purchaser. In the first edition, published in 1953, plain copper conductors only were specified, but it has since been found that many users require tinned conductors and the standard has been modified accordingly. Apart from changes resulting from the introduction of tinned conductors, such as the inclusion of a tinning test, and a few corrections and minor editorial amendments, the test is the same as that of the 1953 edition.

Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2, Park-street, W1.

PERSONAL COLUMN

MR. D. P. C. NEAVE, vice-chairman of the Consolidated Zinc Corporation, Ltd., has been elected chairman of the Zinc Development Association. The former chairman, MR. WILLIAM MURE, managing director of the British Metal Corporation, Ltd., will continue as a member of the Council of the Association.

MR. F. R. MORLEY, previously director of Bowaters Building Boards, Ltd., has been appointed a director of Bowaters Sales Co., Ltd., and sales manager of its building boards division. The former subsidiary company of Bowaters Building Boards, Ltd., has now been absorbed by the building boards division of the parent sales company, and the brand name "Lloyd" has been replaced by "Bowater." The products formerly sold under that brand name will be marketed by the building boards division under the direction of MR. C. GEOFFREY CULLEN, director of Bowaters Sales Co., Ltd.

MR. C. M. SLOCOMBE has been elected to the board of directors of Samuel Fox and Co., Ltd., Sheffield.

MR. F. A. COLE is to continue as managing director of Nu-Enamel, Ltd., which is now operating as an independent privately owned limited company. He will be completely responsible for general control.

MR. S. BARLOW, manager of the bridge and constructional works of Dorman Long (Bridge and Engineering), Ltd., at Middlesbrough, has been appointed general manager of the structural activities of that company, comprising sales, Britannia constructional works, London (Nine Elms) constructional works, erection and stockyard departments. MR. E. IBBOTSON, chief structural engineer at Britannia constructional works, has been appointed manager of the constructional works at Britannia.

The Shop Steward

HAS HE A PLACE WITHIN THE WRA ?

From a Labour Correspondent

THE position of the shop or card steward in any industry has always been of some ambiguity. Building is no exception but there are signs to-day which indicate that both employers' and operatives' organisations might be willing to consider regularising and specifying the position in the form of an addition to the Working Rule Agreement.

It is as well for us to be clear on the functions of a steward as defined by the unions. There are, of course, some industries where the shop steward is sometimes regarded as an unqualified nuisance by the permanent union officials; this is not so in building. Indeed, most of the craft unions have clauses in their constitutions which stipulate the election of stewards as soon as a specified number of members accumulate at any job or shop.

The duties of such unpaid representatives are usually particularised but their main task is to secure full and properly paid-up membership of the union. For this purpose they are equipped with an official credential card issued under the signature of a responsible full-time officer and are called upon to submit a monthly report to the district office. We are here referring to trades stewards who are responsible only to their own trade union; on the larger sites it is also usual for a co-ordinating and leading steward to be appointed and such functionaries derive their official standing from the NFBTO—hence the term "Federation Steward."

The Steward's Duties

The duties of the Federation steward include the handling of such questions as welfare where, obviously, they affect the whole of the operatives on the site. And, although the affiliated unions to the Federation have not explicitly recognised his authority to oversee trades stewards, it is implicit in his position that he should do so, particularly in the matter of membership. The Federation steward should himself be a trades steward and the standard practice is for trades stewards to elect one of their number to the position as distinct from election by the whole of the men. Upon election he should notify the Regional secretary of the NFBTO and request a credential card: with few isolated exceptions this is invariably granted.

This pyramidal pattern of site organisation has existed for many years and is common to most of the main industrial centres in the country. During the late war it assumed greater importance due to two main factors: the immense size of many undertakings and remote locations. The traditional operational areas of District organisers meant that the sites were difficult to service and moreover the officials affected were often products of small towns and rural districts; they were unused to the sharper reactions of city-bred operatives. This situation was recognised both by the Government and the industry, and in 1941 a corps of special TU officers was formed under the auspices and control of the NFBTO, but financed by the Government. These "site

COMPARATIVE PRICES OF MATERIALS

Description as Shown in Current Prices of Materials Pages

(Copyright *The Builder*)

	January, 1939	*January*, 1955	*January*, 1956	*Percentage increase over* 1955	*Percentage increase over* 1939
BRICKS—	£ s. d.	£ s. d.	£ s. d.		
FLETTONS ... ... per 1,000	2 6 3	5 13 0	5 13 0	—	142½
BLUE WIRECUTS ... ... per 1,000	7 4 0	22 11 0	24 14 0	10	242½
GLAZED ... ... per 1,000	24 0 0	64 0 0	75 4 0	17½	212½
PIT SAND ... ... per yd. cu.	7 9	1 1 8	1 2 11	5	210
¾ in. SHINGLE ... ... per yd. cu.	7 3	1 0 0	1 2 5	12	210
¼ in. BROKEN BRICK ... ... per yd. cu.	11 3	19 3	1 0 0	4	80
PORTLAND CEMENT ... ... per ton	2 2 0	4 16 6	5 1 6	9	142
PORTLAND STONE ... ... per ft. cu.	4 5	8 1½	8 3½	2	87½
SLATES—					
24 in. by 12 in. ... ... per 1,000	31 5 0	113 0 4	124 17 4	10½	300
20 in. by 10 in. ... ... per 1,000	20 15 0	74 12 0	82 7 9	10½	297½
16 in. by 10 in. ... ... per 1,000	14 7 6	44 7 0	49 1 3	10¾	247½
TILES—					
MACHINE-MADE (STAFFS) ... ... per 1,000	4 2 6	13 8 9	13 18 9	4	237½
HAND-MADE (BERKS) ... ... per 1,000	4 17 6	13 1 9	14 1 6	7½	189
SOFTWOOD—					
CARCASSING QUALITY ... ... per std.	£18—£22	£95—£100	£98—£102	2½	400
JOINERY QUALITY ... ... per std.	£28—£35	£105—£125	£110—£135	6	300
HARDWOOD—					
EUROPEAN OAK ... ... per ft. cu.	14 0	2 2 6	2 5 0	10	220
ENGLISH OAK ... ... per ft. cu.	10 0	1 10 0	1 17 6	25	275
HONDURAS MAHOGANY ... ... per ft. cu.	15 0	3 5 0	3 5 0	—	333⅓
AFRICAN MAHOGANY ... ... per ft. cu.	12 6	1 5 0	1 10 0	20	140
MOULMEIN TEAK ... ... per ft. cu.	15 0	3 5 0	3 15 0	15	400
R.S. JOISTS, FABRICATED ... ... per ton	16 10 0	54 0 0	57 10 0	6½	250
⅝ in. MILD STEEL RODS ... ... per ton	15 0 0	40 6 0	42 11 0	5	183
1 in. GALVANISED BARREL "C" ... per ft. run	5¾	11½	1 0½	10	120
SHEET LEAD ... ... per ton	23 0 0	142 5 0	163 10 0	15	710
LINSEED OIL ... ... per gal.	2 11	12 0	14 0	16⅔	375
GROUND ENGLISH WHITE LEAD ... ... per cwt.	2 10 0	8 18 0	9 4 0	3	268
WHITE LEAD PAINT ... ... per gal.	16 8	3 2 0	3 4 0	3	280
RED LEAD ... ... per cwt.	1 18 0	7 4 3	7 9 9	4	295

officers," as they were called, were mobile and were sent to various parts of the country as the necessity arose.

Their terms of reference were somewhat less than specific but the general intention was clear: their main task was to establish and maintain site organisation and to direct it into channels of maximum co-operation with works managements. Put at its lowest they were "trouble shooters" but at its best they made a positive and valuable contribution to the war effort. The scheme was a remarkable success. Agents came to rely on the site officer for rulings on the Uniformity Agreement, and valued his experience on labour problems. Stewards no longer felt neglected and isolated, and they welcomed the authority of the Federation officer and the sense of security he encouraged.

Experience and Skill

The scheme ended soon after the war but its brief description is germane to the present discussion because many of the 54 officers were chosen from the ranks of those who had previously served as Federation stewards. The experience and skill they had collected on pre-war sites in the art of labour relations was thus turned to good account and the almost total absence of strikes after their appointments was the result.

The war jobs underlined the importance which the Federation steward must assume on the larger contract; indeed, some agents now actually insist on their operatives organising in this way, and not a few managements have come to regard the set-up as the norm, even preferable if the alternative of sudden and apparently inexplicable trouble from a leaderless labour force is to be avoided.

The pattern then is indubitably in existence but, like Topsy, it "just growed" and is organic rather than planned. Its very lack of sharp definition is sometimes advantageous because it allows for flexibility in face of the varied requirements of actual jobs. And yet some accommodation in the Working Rule Agreement based on the best practices could be beneficial and a start might be made by a written descriptive recognition of Federation stewards.

The NFBTO actually attempted this last year through the medium of the Regions, the idea being to secure some kind of reference in the various regional supplementary working rules. In the main, however, the proposal met with little enthusiasm from the employers' representatives and it would seem that the issue can only be satisfactorily tackled at national level.

A Wrong Concept

The conception of stewards being automatically hostile to managements is old-fashioned; there are far too many current examples in many parts of the country of happy relationships to admit that; yet it would be less than candid to remain silent on the exceptions. These have been chiefly in the London region—historically the storm centre of the building industry since the first attempt to introduce "the Document" in 1834.

Post-war disputes have usually been focused on the "victimisation" issue, and the firing of a steward or stewards the immediate prelude to a stoppage. Not all of these have been occasioned by "politicals" and there have been some remarkable examples of ham-fistedness by inept site managements. Yet, of course, the ancient rallying cry of "victimisation" has lost much of its validity in a period of unprecedented full employment; its sinister ring being owed to the once very real assumption that a trade unionist was being deprived of the right to work. But such conceptions die hard, and the word still has powerful effect on the instinctive loyalties of building operatives.

The influence and alleged secret planning of Communists have often been alluded to by the Press. It has been stated that the quasi-religious fanaticism and almost military discipline of the faithful have been harnessed for the deliberate purpose of engineering strikes as a contribution to the East-West cold war since 1947. There has been some dramatisation of this and the Red bogy, fully exploited, can be a fearful apparition, but there may be some substance to the charge.

The successful capture of the trades union organisation of a large job by men who apparently desire dispute can be a serious matter to the contractor concerned because the industrial issues which arise are merely instruments in the political effort, and appeals to ordinary principles a waste of time. On the other hand it is surprising how often managements seem to gratuitously offer to such people the very issue which is likely to cause trouble.

However, it would be a distortion to ascribe more importance to this than it deserves. The facts are that even in London the overwhelming majority of building sites proceed without the aid of the Communists and many disputes—even recalcitrant stewards—are extremely non-political. There are also signs that the activity described is lessening and, in any case, the numbers involved are demonstrably small.

Restoring Discipline

The unions have not been unaware of the situation, and certain steps have been taken to restore discipline which for obvious reasons they do not care to reveal. It would appear then that the time is opportune for a fresh look at the position of the steward in building to-day. As has been said, many progressive managements already regard stewards as an integral part of works organisation, and this development is wholesome.

The extent to which the Elton Mayo concept of industrial psychology has progressed is, however, decisive. If it has gone so far as to enable the leaders of the employers to agree on an addition to the Working Rule Agreement there should be little difficulty in finding apt terms, for the NFBTO is already committed to the principle.

It is to be hoped, though, that in the search to placate the unnamed fears compromise will not produce an innocuous ambiguity that would leave the situation unchanged and merely waste the time of the negotiators. If the subject is to be tackled at all, the Federation steward, at least, should be boldly recognised and afforded a standing which, whilst adding to his status, would also impose responsibilities. And if nerves hold out, the nettle of termination of employment ought to be grasped; on this the suggested rule could produce its highest effect for it could largely remove the most potent cause of "the wild cat" strike.

Too Much Caution ?

Too much caution might even be itself the reason for argument at site level; this phrase or that could mean different things to different people. At the same time, given clarity, the unions would need to respond by guaranteeing surgical action if any particular steward failed to measure up to the standards envisaged. If these requirements were met by both sides there might be encouragement of the idea of special training schools being established by the unions where, in, say, a fortnight, an outline of the principles of industrial relations and negotiative techniques could be imparted to cadres of selected stewards.

High levels of organisation do not necessarily spell conflict—witness the steel and chemical industries—and an intelligent and generous approach would unquestionably lead to greater site efficiency; an aim which ought to attract all of good will.

USAF HOUSING

$5m. Contract Awarded

A $5,000,000 CONTRACT for the erection of more than 750 bungalows at nine air stations throughout the United Kingdom was awarded on January 5 by the United States Air Force to the London firm of Unity Structures, Ltd. This contract, which is scheduled to be completed by the end of 1956, comprises 3- and 2-bedroom bungalows specially designed to the United States Air Force requirements by the consultant architects for Unity Structures, Ltd., and originators of the Unity system of construction, Kendrick Findlay and Partners, LRIBA, 35, Tavistock-square, London, WC1.

The area of the 3-bedroom bungalow is 1,241 sq. ft. and the 2-bedroom bungalow 1,069 sq. ft. The bungalows will be built in pairs and in the case of some of the 3-bedroom type, have been so planned as to enable internal adjustments to be made to provide in each pair for one 4-bedroom and one 2-bedroom bungalow or 2/3-bedroom bungalow. Each bungalow will comprise a spacious living-room, dining recess, kitchen and separate bathroom and WC. Built-in wardrobes will be a feature of each bedroom and a central heating system will provide for full heating. The specially planned kitchen has been designed to the traditionally high specification required for all American homes.

The Unity system of construction consists of a concrete, steel and timber structural frame to which are attached prefabricated elements forming the walls.

INQUIRY BUREAU

Costs of Plant Hire on a Civil Engineering Contract

Q.—This council (which is a municipal borough) entered into a contract in September, 1950, with a public contractor to undertake the construction of storm and foul water sewers and works incidental thereto.

The agreement incorporated the general conditions of contract for use in connection with works of civil engineering construction issued by the three relevant associated institutions. The general conditions incorporated were those of the second edition dated January, 1950, and included a revision to this second edition of the same date.

Clause III of this revision reads as follows:

> "If any Statute or Statutory Instrument shall after the date of tender be formally applied to the Contract or become compulsorily applicable thereto, the Employer will reimburse to the Contractor the net extra cost of the Works occasioned by compliance with such Statute or Statutory Instrument over and above the cost of carrying out the work under the Working Rule Agreement of the Civil Engineering Construction Conciliation Board."

Rates for the use of excavating plant were not included in the schedule of materials annexed to the bill of quantities and it was nowhere specified that such plant should be used. The use of such machines was, nevertheless, accepted as being a normal and businesslike thing to do. The contractors notified the council in the course of the contract of the publication of S.R. & O. 2060 (1950) (Control of Rates of Hire of Plant Order) and that it was their intention to claim the extra costs involved. This letter was acknowledged without stating either acceptance or non-acceptance of any claim for reimbursement.

Would you please state whether or not, in your opinion, the contractor can properly and legally claim from the council the increased costs of plant hire. "DIGGER."

A.—A legal correspondent writes: In order to give a definite opinion on this case, it would be necessary to examine in detail all the contract documents and to consider any other transactions between the parties. It is, however, a clear principle in this type of case that it is for the contractor to prove that he is entitled to the extra payment which he claims. In so far as the contractor is obliged to rely upon Clause III, he will have to show that the Control of Rates of Hire of Plant Order was either formally applied or became compulsorily applicable to the contract. This may present the contractor with some difficulty.

The words "formally applied" must, I think, in this context mean formally applied by the parties to the contract, and that apparently was not done. Moreover, I am doubtful whether the control order could be said to have become compulsorily applicable to the contract. I do not think it particularly relevant that it was nowhere specified that excavating plant should be used. As "Digger" admits, the use of such machines was accepted as a normal and businesslike thing; indeed the contractor might well argue that, but for the use of such machines, the contract price would have been a good deal higher than it was. The real difficulty for the contractor is that the control order did not of itself compel him to pay higher rates for the hire of plant. The control order simply raised the maximum rates at which it was permissible to let or hire plant. The contractor may, of course, have been bound by his agreement with the hirers to pay such increased rates as might be permitted from time to time; that, however, would not help the contractor to show that the control order has become compulsorily applicable to his contract with the council.

I think it probable that the contractors genuinely thought that the terms of the contract were wide enough to enable them the increased costs involved; if the council had any doubt about the matter, it would have cleared the air if they had said so at the time instead of merely sending an acknowledgment. That, however, hardly affects the legal position. A. E. T.

Legality of Rising Price Clause

Q.—In July, 1950, we submitted an estimate to a firm of building contractors for the painting of some houses they were erecting for a local authority, and in our quotation we inserted the clause "Our quotations are based on present day cost of material and rate of labour, any further increases to be charged extra." Subsequently our tender was accepted, without any reference to our clause concerning increased costs, and in due course we commenced the work. In February, 1952, we were notified by the building contractors that our claims for increased costs on materials would not be allowed by the Corporation but, in view of the clause in our tender, we contend that our claims should be paid.

On the same contract part of our claim for increased rate of labour has been disallowed because the work was not finished by the date fixed by the Corporation for completion. You will doubtless appreciate that we were the last trade to work on the houses and we were continually held up and delayed by the other trades not having finished their contracts. Consequently we felt that it was through no fault of ours that we could not complete by the given date and we consider our claim should have been paid in full. Under these circumstances have we a legal right to force payment of these claims? P. A. C.

A.—A legal correspondent writes: By their tender, the sub-contractors offered to do certain work for a lump sum subject to a condition that any increase in the cost of materials and wages should be charged extra. The main contractors accepted that offer, and prima facie therefore the sub-contractors are entitled to be paid for the increased cost of materials and wages. I assume that the parties did not incorporate the sub-contract in a formal document and that no provision was made for the ascertainment of such costs by reference to a schedule of basic prices and rates. In these circumstances the sub-contractors might have some difficulty in enforcing their claim for extra payment. In that event, however, I think that the sub-contractors could argue that no sub-contract had come into existence, because of the uncertainty of the provisions relating to the contract price, and that they were entitled to be paid for the work which they had done on a *quantum meruit* basis, i.e. a fair price for the work.

I observe that the main contractors are resisting payment on the ground that the Corporation as building owners will not allow anything for the increase. That is quite irrelevant unless the main contractors can point to some provision in the sub-contract making the payment of increases dependent on the approval of the Corporation. The rights of the sub-contractors are governed solely by the terms of the sub-contract to which the Corporation are not a party.

As regards the second problem, the sub-contractors are not liable for delays caused by other trades: see the Scottish case of *Duncannon v Scottish County Investment Co., Ltd.* (1915). A. E. T.

Australian Research

The 1954-55 annual report of the Building Research Division of the Australian Commonwealth Scientific and Industrial Research Organisation has recently been published. Copies from: The Chief, Division of Building Research, CSIRO, Graham-road, Highett, S.21, Victoria, Australia.

PILE DRIVER NOISE

Asbestos "skirt" used for silence

WHEN work began on excavating the "Big Top" site in central Birmingham early in 1955, the noise made by the pile drivers was so loud that residents and businessmen in the area complained. A meeting was called and Sir Robert McAlpine and Sons, Ltd., the contractors, agreed to investigate ways and means of reducing the noise. The most promising method proved to be a sound absorbent "skirt" mounted on the hammer itself. The final design can be seen in the illustration. It is made of two layers of asbestos cloth padded with glass wool. The skirt is attached to a steel belt which is strapped round the steam hammer. The effectiveness of this silencer was confirmed by test carried out with a sound level meter (as shown) supplied by Dawe Instruments, Ltd. Experiments are still continuing, but it is clear that considerable relief from pile driving noise can be obtained by simple and inexpensive means.

**** News of interesting means of overcoming unusual problems is welcome.*—ED.

ORDNANCE SURVEY MAPS AND PLANS

Need for Continuous Revision Emphasised in RICS Paper

BRIGADIER A. H. DOWSON, OBE, BA, FRICS, and BRIGADIER M. O. COLLINS, CBE, FRICS, gave a joint paper on January 2 to the Royal Institution of Chartered Surveyors entitled "The Continuous Revision of Ordnance Survey Maps and Plans," in which emphasis was put on the desirability of keeping ordnance maps up to date even in times of economic stringency. The authors' introductory remarks were as follows:

"There is no question that what is required by government authorities, and by the public, is a map which represents the relevant facts as they are on the day when the map is required for use."

This quotation from the Davidson Committee's Report may be contrasted with the surprise that we sometimes meet that there is still anything left for the Ordnance Survey to do. It is perhaps a natural attitude for those whose only acquaintance with maps of this country is the use of the one-inch for occasional holidays; but it must surely be appreciated by all those who are intimately concerned with the land that the Ordnance Survey has a continuing task.

In a largely industrialised and densely populated country such as Great Britain, in which land and other property values are so relatively high, it is not only necessary to have a good large-scale survey; it is also essential to maintain it up to date ; furthermore, the cost of the survey is fully justified by the scope of the services which depend upon it. It is not difficult to estimate the cost of a survey, but unfortunately it is almost impossible to express in terms of money the effects of having to go without, or of having only an inadequate survey — in lost opportunities, ill-founded projects, and general misdirection and duplication of effort. There is a natural tendency, when money is scarce, to curtail services whose benefits are not immediately apparent, and the national survey is one of the services which has suffered in this way.

National Survey

A national survey is a form of capital investment. Like many other forms of national investment, its cost is high—too high to be borne by any one individual or organisation. Therefore it must be borne by the State. It is an investment from which dividends are expected by all sorts of people for all kinds of purposes: and it is only by entrusting the State with the execution of the survey that the dividends from this investment, in the form of maps and plans, can be made available impartially to all national users. It is also the most economical way, for surveys conducted piecemeal by separate organisations cannot be made available to all, and should this be attempted as a substitute for a national survey, duplication of effort and consequent waste of money are the results. Furthermore, separate and unco-ordinated surveys cannot be expected to join up to provide a homogeneous map coverage of the country. That is not to say that there is no room for private surveys for special purposes—indeed many such surveys are constantly being made—but it emphasises the need for a basic national survey, provided by the State, as a basis for all kinds of private and national projects.

Like any other form of investment, the value of the national survey must be maintained, and this means keeping it up to date. Failure to do this may have two expensive results:

In the first place, users will be denied the up-to-date maps and plans they need, and must either go without or undertake their own work of revision, with all the waste that that entails.

Secondly, the capital value of the survey will deteriorate until it may vanish altogether, when revision is no longer technically possible and a complete resurvey must be undertaken.

The authors went on to examine in detail the technical problems of revision and maintenance, including the survey and publication aspects.

THE MONOPOLIES BILL

Objections to Recommendations

IN connection with legislation on monopolies, which is to be introduced after the Parliamentary recess, the distributors of building materials have submitted to the Government recommendations about the form which the proposed new tribunal to pass judgment on certain trade practices should take and the way in which it should operate.

In a memorandum to the President of the Board of Trade, Building Industry Distributors [BID], which has about 1,500 members, with the support of the Distributors of Builders Supplies Joint Council, asks for an impartial judicial tribunal presided over by a High Court judge. It also suggests that new terms of reference be drawn up for the existing Monopolies Commission to limit its powers to fact-finding once the new tribunal has been set up.

The memorandum states: "The tribunal could serve an extremely useful purpose but a number of precautions are essential to ensure that the public interest is genuinely served by the tribunal and that it does not become bound by economic or political theories or subject to political or bureaucratic pressure."

The memorandum also requests that the use of the word "monopolies" should be avoided in the title of the Act "unless it is the intention to submit to the jurisdiction of the tribunal the operations of the real monopolies in this country, i.e., nationalised industries with exclusive powers of production and sale, and trade unions who have imposed or have the power to impose closed shop restrictions on employers and labour."

BID states in the memorandum: "The public interest also changes and is to a large extent dependent on outside factors, such as the state of the nation's prosperity, unemployment, availability of raw materials, the level of prices on the world market, capital available, foreign competition, and so on. The tribunal must therefore be free to take all these matters into consideration at the moment of judgment. But as circumstances change, industries concerned should be permitted to apply for the reopening of a case if it can make out a *prima facie* case that the circumstances in which a practice had been condemned have changed."

Political Pressure

BID and the DBSJC are strongly opposed to an administrative tribunal, and explain that "administrative tribunals are subject to political pressure and their decisions subject to departmental policy. It is basically wrong in English justice for the law or regulation-making authority to be also the judge of his own regulation."

The judicial appeal tribunal which was constituted under the provisions of Section 15 of the Road and Rail Traffic Act, 1933, genuinely served the public interest and could, it is suggested, be used as an example in setting up the new tribunal. It is therefore suggested that the tribunal should:

1. Be judicial, presided over by a High Court judge.
2. Pass judgment only when a complaint has been made and proved before it, with the Board of Trade acting as "prosecutor." "The onus of proving that the public interest is abused by the use of the practice concerned should rest squarely with the Board of Trade."
3. Call witnesses who should be available for cross-examination, and evidence should be given under oath. No evidence not disclosed to the "accused" industry should be permissible.
4. Record all findings, with the reasons why they have been reached, so that a system of case law can be built up for the guidance of both industry and the Board of Trade, but with the clear understanding that changed conditions would be taken into account in later hearings of similar cases, because circumstances do alter cases.
5. Be original and not appellate. There should be provision for appeal.

About the future functions of the Monopolies Commission as a fact-finding body, the memorandum explains: "If the Commission has investigated a complaint and accepted it as valid and the Board of Trade, after due consideration, decides to act upon it, the complainant must give evidence in person when the case reaches the tribunal. . . . Otherwise British industry would be at the mercy of every crank with an imaginary grievance. The tribunal should have the power to refuse to accept frivolous or vexatious complaints for hearing."

A covering letter to the President of the Board of Trade adds that "in so far as the distribution of building materials is concerned, there are no practices which operate adversely to the public interest. At the same time, however, if it is the intention of the Government to establish a tribunal, the organisations named above welcome the opportunity it would afford to clear up any misunderstandings which may exist about the trade."

EASTERN FEDERATION

The Outlook for 1956

IN his review of 1955, to be presented at the annual general meeting of the Eastern Federation of Building Trades Employers, to be held at Cambridge next Wednesday (January 18), the President, MR. BERNARD T. HENMAN, MIOB, has concentrated on discerning the outlook for 1956 rather than focusing attention on past events. Following are extracts from his review:

Industrial outlook.—The year which has just closed has been a significant one for our industry. Although at the moment the level of work remains relatively high, we have witnessed the inception of a change in the pattern of demand for building work which must be set against and is largely attributable to the condition of the country's economy. As this review is prepared, concern for the future tends to over-shadow the record of a year of continuing prosperity in the industry. The coming days will present a challenge to everyone connected with building and one which our own Federation has already recognised and will do increasingly more to meet.

Labour and production.—In our aim to ensure that increases in pay bring corresponding increases in output, we, as an industry, have not been markedly successful. Our prices keep going up and two wage increases in 1955 accelerated this process. Building wages must of necessity be related to those in other industries and early this year the union's demands were considered at a time when substantial increases were being granted elsewhere. In the coming months we may be faced again with the same position since new and bigger demands from unions in many industries have now been made without any apparent regard for the effect substantial wage increases will have on the country's economy and on the demand for the resultant goods and services. In our own case, the unions contemplated initially a demand for 4d. per hour but this was increased to 6d. per hour after the Autumn Budget. The revision of this figure may well be regarded as dictated by politics perhaps even more than by economics.

Firm Stand Needed

Members frequently make the plea that we must stand firm in this matter of wages increases and that one industry must take the lead in breaking away from a continual round of advances in wages leading to a general rise in prices. It must be realised that if we are unable to reach a joint decision within our own industry's negotiating machinery—and this is our primary duty—then a subsequent arbitration award would inevitably reflect increases recently granted in other industries. The view may well be taken that employers' organisations have not that singleness of purpose displayed by the Trades Union Congress primarily because each industry fears that it may lose its labour if it does not keep pace with other industries likely to compete for it. It is important to note, however, that in each additional twist of the inflationary spiral, the nationalised industries have played a major part.

There would appear to be no hope of steadying the level of prices until more restraint is shown by organised labour in the matter of wage claims. In the light of recent developments there seems to be a real need for concerted action by employers to keep wages increases within reasonable bounds so that the level of remuneration does not outstrip the rate of production.

It would certainly be refreshing and most welcome if the building trades unions showed some active concern for the level of production. There is a very real need for a sincere and concerted effort by the union to preach at all levels the need for harder work. If labour output were to be raised by 10 per cent.—and this is certainly a modest figure—then there would be no need for us to haggle over wages increases of 1d. or 2d. per hour. This, coupled with the wider and unrestricted employment of new machines and new materials, would do much to avert the dangers which many of us foresee.

Winter Courses

Foremen and Supervisors.—In 1955 we felt that in the extension of our training programme we should concentrate on a residential course for general foremen. The outstanding success of our course at Belstead House, Ipswich, last March (the first of its kind, we are told, in Western Europe) has led us to increase our arrangements fourfold in the provision of places at three main centres in 1956. It is important that these courses should not be isolated occurrences in the lives of those attending, and winter meetings will be arranged increasingly where the need exists.

Senior Executives.—There is a tendency at the present time for people to proclaim the necessity for everyone else to become better educated. We feel that in our training programme we should start at home, and in consequence a course for senior executives of member firms has been arranged for next March in collaboration with the University of Cambridge Department of Extra-Mural Studies.

Building programme.—Since local authority house-building has formed an important part of the work of many of our members, the cut in the general housing subsidy with the possibility of its ultimate removal will doubtless have an effect on the turnover of member firms. The gap which will be left by a reduction in the general level of local authority housebuilding should theoretically be filled by increasing activity on private development, the slum clearance programme and work qualifying for Improvement Grants.

Particularly in the northern part of our region we are not unduly optimistic about an extension of private enterprise housebuilding. We share the desire of the Minister of Housing to see the provisions for Improvement Grants widely implemented. In this class of work there is a useful field of employment for our smaller firms, and we shall continue to do all we can to stimulate interest in preserving the older houses in our towns and villages.

We had imagined that one effect of the credit squeeze would have been some indications of a reduction in industrial building. This fear has not generally been realised so far since there is no real slackening in the level of industrial building in the Eastern Counties.

RECENT BRITISH TRADE MARKS

THE following particulars, which are extracts from the *Trade Marks Journal*, are reproduced with the permission of the Controller of HM Stationery Office. The *Trade Marks Journal* can be obtained from the Patent Office, annual subscription £5.

CELUCID: 742599. Preservatives (not being paints) for brickwork. I.B.E., Ltd., Dundee-rd., Trading Estate, Slough, Bucks.

PLYCOMOR: 743174. Chemical preparations for use by addition to building cement, building plaster and building mortar to improve their texture and setting qualities. I.B.E., Ltd., Dundee-rd., Trading Estate, Slough, Bucks.

ALDACOL: 742169. Paints, varnishes (other than insulating varnish) and lacquers. The British Oxygen Co., Ltd., Bridgewater House, Cleveland-row, London, SW1.

ANDOS: 745670. Paints, varnishes, japans, lacquers and wood stains. D. Anderson and Son, Ltd., Barton Dock-rd., Stretford, Manchester.

ANTIKEM: 745672. Paints, varnishes, enamels, distempers and wood stains. Duresco Products, Ltd., Riverside Works, River Bank, London, SE7.

ETA: 744371. Flushing cisterns made of plastics and being for water closets. T. Ventom and Son, Grimston-rd., London, SW6.

LATICRETE: 743716. Mixtures of liquid rubber latex and cement with non-metallic fillers for use as floor-making materials and as fillers in building construction and repair. United States Rubber Co., Rockefeller Center 1230, Avenue of the Americas, New York.

SILOPAVE: 745610. Non-metallic building materials for the construction and laying of floors. Halifax Construction and Flooring Co., Ltd., Walnut-st., Halifax.

MYCOPOL: 745840. Wood preservatives containing fungicides. Supra Chemicals and Paints Ltd., Hainge-rd., Tividale, Tipton, Staffs.

ACRASILVA: 744736. Aluminium (silver) paint. Acra Whitehall Paints, Ltd., Abbey-rd., Shipley, Huddersfield, Yorks.

EPICOL: (745777); EPIDEC (745779): Paints, varnishes, distempers, japans and lacquers. Bitulac, Ltd., Collingwood-bldgs., Collingwood-st., Newcastle-on-Tyne.

WALTERISATION: 746319. Anti-corrosives. The Walterisation Co., Ltd., Waddon Marsh Way, Purley Way, Croydon, Surrey.

THERMOCLAD: 745685. Asbestos sheets coated with bituminous emulsions and granite chippings for use in building and construction. The Decraspray Co. (Welling), Ltd., 15 Crook Log, Bexleyheath, Kent.

R.I.W.: 727660. Preparations (not being paints) for waterproofing, damp-proofing and preserving concrete, cement, brick and the like building materials. R.I.W. Protective Products Co., Ltd., 325, Whitehorse-rd., Croydon.

SPRINGLAK: 743690. Anti-corrosive lacquers and anti-corrosive paints. Swale Chemicals, Ltd., Aycliffe, Darlington.

POLICROME: 745542. Paints, varnishes, distempers, japans and lacquers. International Paints, Ltd., Grosvenor Gardens House, Grosvenor-gdns., London, SW1.

METAVIN: 745567. Paints and preservatives against rust and against deterioration of wood. Croda, Ltd., Croda Works, Rawcliffe Bridge, Goole, Yorks.

FLAIR: 746797. Paint and surface coatings in the nature of paint. William A. Halstead, Ltd., Goodwood-rd., New Cross, SE14.

FIRMOSET: B738797. Refractory building materials in plastic or powder form. Coupe and Tidman, Ltd., 52, Battersea Church-rd., SW11.

HYDROFOIL: 743910. Non-metallic materials in strip form for filling or sealing joints in building or construction. Expandite, Ltd., Cunard-rd., London, NW10.

HERCULIME: 744415. Lime and lime preparations for use in building and roadmaking; and limestone. Hall and Co., Ltd., Victoria Wharf, Cherry Orchard-rd., Croydon, Surrey.

DUCO: 742993. Paints and varnishes (other than insulating varnish). I.C.I., Ltd., SW1.

METEORITE: 742707. Tungsten-carbide tipped masonry drills and chisels, all being hand tools. J. P. Isaacs, Ltd., 80, Church-rd., W3.

OUTSIDE PAVING WORKS

Keeping Maintenance Costs to the Minimum

By J. H. ARNISON, AMIWHS

THE choice of materials for outside paving works should always be given careful consideration. The main points to consider are: what effect will the paving have on the building? What is the paving to be used for?

Some paving works are necessary to give access to buildings, whilst others are used to provide amenities or to maintain a given margin below the damp-proof course.

A well-selected material, but badly constructed work, will spoil the appearance of any building. Inferior materials should never be used if good results are to be expected. Careful study of the various British Standards Specifications for materials is important, and should not be overlooked when selecting and ordering materials.

The materials and methods of construction for all paving works cannot, of course, be covered in one short article.

School Playgrounds

With the increase in school and factory building, some thought should be given to the playgrounds and approach works that will be necessary. The materials used in the construction of school playgrounds should be strong and durable, one of the most suitable being precast concrete flags. The advantages of using concrete flags are that they are easy to lay when using skilled labour, and they may be taken up and relaid at small cost.

The street mason and pavior is the tradesman concerned with the laying of all types of paving, and his skill should be used if sound construction is required. The tradesman is able to produce his own paving levels from given datums and to produce a construction that will provide for many years of hard wear, with little or no maintenance cost.

A properly constructed playground should be free from maintenance for at least 10 to 15 years, whilst a badly constructed playground may require maintenance within two or three years of completion.

No matter how efficient the material and workmanship of the surface, good results should not be expected when the base upon which the paving is to be laid is not correctly prepared. The base is of extreme importance when the playground is to be constructed over an area that has been filled in.

The dumping of material such as broken bricks, rubble, etc., in a haphazard manner, may often result in the distortion of the paving at a later date. These areas should have as much care and attention as may be given to any other type of foundation. All top soil and vegetation should be removed; this may be carried out by means of a scraper or an angledozer.

The material used for filling should be free from vegetation and clay, it should be placed in layers 12 in. deep and each layer consolidated. When all top soil has been removed, a layer of clinker should be spread over the area and compacted; this should be followed by a layer of rubble and a further layer of clinker or similar granular material.

Whilst an 8-ton powered roller is the most suitable machine to use for compacting the fill, a D6 or similar machine, if already in use on the site, may be used with good results. To consolidate the fill with this type of machine it should be allowed to traverse each lay in a longitudinal and transverse direction.

The sandwich method of filling, in which a layer of granular material is spread over each layer of rubble, provides a sound base; the granular material when being consolidated binds together the rubble, which should prevent any future subsidence.

When using precast concrete flags as the surfacing material, consideration should be given to the weight that will be superimposed upon the paving. Is it necessary for vehicles to traverse the playground?

Precast concrete flags are manufactured in four sizes and two thicknesses unless otherwise specified: —

3 ft.	0 in.	by	2 ft.	0 in.	by	2½ in.	and 2 in.
2 ft.	6 in.	by	2 ft.	0 in.	by	2½ in.	and 2 in.
2 ft.	0 in.	by	2 ft.	0 in.	by	2½ in.	and 2 in.
1 ft.	6 in.	by	2 ft.	0 in.	by	2½ in.	and 2 in.

When flags are delivered to a site a test should be made on a fair example of each load or order. Three flags in every hundred should be selected and inspected for cracks or flaws; a straight edge should be placed on the wearing surface to test for evenness of surface, flags not equal to requirements should be returned to the manufacturer.

When the area to be paved has changing crossfalls, the smaller flags are most suitable.

Flags having a thickness of 2 in., which should carry a load of 1,232 lb. per ft. width on test, are suitable for the average playground, whilst flags having a thicknes of 2½ in., which should carry a load of 1,904 lb. per ft. width on test, should be used when light vehicles have to traverse the paving.

Before the flags are laid in position a 3- to 4-in. layer of granular material should be spread over the prepared base, and consolidated by means of a 30-cwt. or similar roller.

Establishing Levels

Reference levels should be established by means of a dumpy level to give the finished level of the paving; intermediate levels may be established by the tradesman with the aid of boning rods. The flags are laid to a line which should be set to pass over a series of levels. The level of any paving against a building should be at least 6 in. below the damp-proof course, and be laid to conduct surface water away from the building.

The flags may be laid to a bond in which all transverse joints are broken by the preceding flag; this is called Worcester bond, stretcher bond, or transverse bond (the term varies in different parts or the country), or in courses having straight joints, called straight course bond.

Several methods may be employed for bedding the flags: —

Spot Method.—In which half a trowel of lime mortar is placed on the prepared bed to represent the four corners of the flag.

Ribbon Method.—In which a band of lime mortar is placed on the prepared bed to represent the perimeter of the flag.

Stabilised Method. — In which cement is mixed with the granular bedding.

Before each flag is placed in position, the vertical faces of the preceding flags should be buttered with lime mortar. About 18 lb. to 20 lb. of lime mortar is required to complete each square yard of paving.

When placed in position, a flag should be about ¼ in. above the required level. This margin is to permit consolidation by means of a maul.

When being consolidated, the mortar previously placed on the prepared bed, on which the flag has been placed, should extrude at the sides of the flag and from between the joints.

After being laid, each flag should be checked for accuracy of level by means of an 8-ft. long straight edge, placed on the completed paving and extended to adjacent intermediate levels. Each 20 ft. of completed work should be checked by means of boning rods.

A street mason and pavior with one labourer can complete 60 to 70 sq. yds. of paving per eight-hour day, including the setting of levels and the sealing of joints.

Checking for Alignment

Each day's work should be checked for alignment and level and the joints sealed by pointing. All joints should be brushed clean by means of a stiff bass broom, and lightly sprayed with water.

A cement mortar consisting of one part of cement to three parts of sand should be prepared, and applied by trowel along each joint.

The cement mortar, whilst sealing the joint at the surface, will permit the flags to be taken up for relaying when necessary. The waterproof joint will provide protection against the ingress of water, which if permitted to reach the base will result in loose paving.

Another method of sealing the joints is to prepare a dry mixing of one part of cement and three parts of sand; this is brushed into all the joints and packed with the edge of a trowel.

Grouting by means of a cement/sand grout, whilst sometimes used, has the disadvantage that when the flags have to be taken up for repairs, some of them are liable to fracture.

The joints should not exceed ½ in. width, unless specially required. Wider joints often form a trap for seeds from vegetation, which when germinated will distort the paving, and unless checked at an early stage will result in a high maintenance cost.

When amenities have to be considered

for approach works to a building, a pleasing effect may be obtained by using a straight course bond with joints of 2 in. width. When the paving has been completed, the joints are filled in with a fines concrete of a contrasting colour. This type of paving will be found most suitable for the paving in front of the entrances to schools and office buildings.

Careful consideration should always be given to the drainage of surface water from any area of paving. Ponding of water is an inconvenience, and should not occur if the paving is checked during construction; it may often result in the failure of the paving due to the penetration of water in a badly sealed joint.

A paved area should be bordered by means of a kerb or edging as a protection against lateral spread, and to prevent grass or weeds from adjacent verges from overgrowing on to the paving.

When a channel course is to be used to conduct surface water from the paving to a gulley it may consist of a course of flags, or a grooved channel. The channel course should be laid on a bed of concrete to the required levels and the remainder of the paving levelled in to this course.

Care should always be taken fully to consolidate the ground adjacent to gulley chambers, as this may often be a source of weakness, resulting in the subsidence of the paving and consequent ponding of water.

When flags have to be cut and dressed to fit a recess or to accommodate a similar feature, the cut should be true to the required shape and the vertical face when dressed should be square and neat. Flags that are undercut will be a weakness, often resulting in poor sealing of the joint, and consequent penetration of surface water into the base through the joint.

All paving should be inspected for possible weakness about two weeks after completion; joints if necessary should be re-pointed.

CONSTRUCTIONAL TRENDS IN CONCRETE

Exploiting the Possibilities of Available Materials

By J. E. GUEST

IT is always of interest, and often of value, to pause to consider the possible lines of development open to a particular technique. Frequently, too, it is interesting to note how many of the methods now being widely discussed were, in fact, introduced very many years ago but ignored because the industry was not then able to make use of them. An example of this nature is the publicity recently given to the method of casting concrete wall-slabs on the ground and "tilting" them into their final position, a method now very popular in the USA. The "tilt-up" method was, in fact, used in this country in the 1920's for the construction of cottages. The development of reinforced concrete in Great Britain has taken place largely over the last 50 years: the following notes are not presuming to indicate developments over the next 50 years, but merely possible lines of immediately achievable ends.

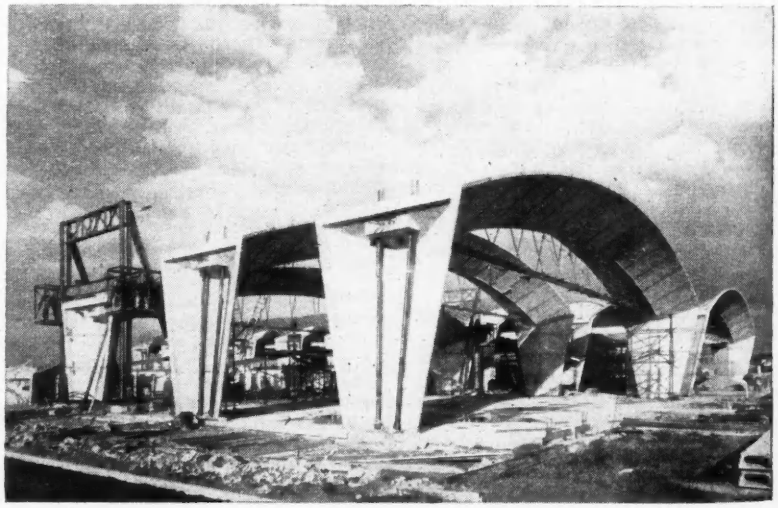
Materials

It is logical to start by considering the improvements that are desirable in the qualities of materials and the possibility of obtaining such improvements at an economic cost. First, cement. Portland cement is a complex chemical body; the physical and chemical changes accompanying its setting and hardening are today but imperfectly understood. Improvement of the quality of the best Portland cement as manufactured today is unlikely before the fundamental research now being carried out is completed. Where improvement may be possible is in the reduction of the variation between the properties of the available cements. All of them fulfil the requirements of the British Standard, but some exceed the requirements by a much greater margin than others.

In nearly every case the so-called "scientific" proportioning of concrete mixtures assumes that the cement is of constant quality, ignoring all the variations that are known to be present in the cement and concentrating entirely on variations in the physical and chemical properties and grading of the aggregates. This factor accounts, in all probability, for a large part of the wide distribution of crushing strengths which are recorded during the course of any large testing programme. Cement manufacturers are aware of these variations but until the strain on their works, due to the amount of cement required for all purposes, is eased, it is difficult to see how any improvement in this respect can be made. Nevertheless, the desirable properties of cements can be described—reduced shrinkage and creep are probably the most important requirements — and together with the fundamental research should go investigations into producing a better cement.

Secondly, there are the aggregates. With natural aggregates it appears to be entirely a matter of balancing the cost of better grading and selection against the improvements that this would achieve in the concrete. Fortunately, there are few aggregates in this country known to have any undesirable chemical reactions, and selection of the best for any particular mixture is largely a matter of combining those available on a basis of size and shape. Much more consideration could be given to the use of light-weight aggregates, both natural and manufactured. These are of particular interest with the increasing use of large precast members, the handling of which presents difficulty; in such circumstances a reduction of a relatively small amount in the unit weight of concrete is of great value. In the USA such aggregates are very popular and are now being used for a wide variety of normally reinforced and prestressed concrete products. In addition to the ease of handling lighter members there is often an improvement in such qualities as heat and sound insulation.

Thirdly, there is the reinforcement. This is conveniently considered on the basis of its yield strength. For normal reinforced concrete ordinary mild steel with a low yield stress is likely to be used for small works in conjunction with relatively low-strength concrete. For larger work where the concrete is carefully controlled and of high compressive strength, the advantages of high-tensile deformed bars are notable. The use of such bars, however, implies careful design of the reinforcement details to ensure adequate compaction of the concrete and ease of placing, and to eliminate as far as possible any hair cracks which may occur. Both these factors are influenced by the shape of the deformed bar, which should be such as to ensure complete em-



Mechanisation on the site is illustrated by these twin factory buildings, each of 90 ft. span by 250 ft. long, of which the roofs are precast on the ground and raised to their final position by the temporary steel frames shown to the left.

bedment of the bar in the concrete, thus developing the greatest possible adhesion between steel and concrete and protection of the bar against corrosion. The deformations should also be of a shape that will not set up high concentration of bearing stress, and hence places where cracks are most likely to occur, and they should develop in bond the ultimate strength of the bar without the use of any anchorages which are, inevitably, places for excessive local stresses.

The most efficient use of high-strength concrete and high-strength steel is in prestressed concrete, which by its very nature gives a structure free from cracks. Wire with very high-tensile properties is generally a cold-worked mild steel with which it is particularly difficult to obtain good bond properties; at the same time the amount of cold-working frequently leads to difficulty in making a deformed surface free from local stress concentrations. The best method of manufacture is probably one in which the cold-working is obtained by torsional extension.

Developments in the Manufacture of Concrete

The manufacture of concrete is likely to be influenced by two processes: one is the application of the "vacuum" process by which excess water is sucked from the concrete, which at the same time is compacted by atmospheric pressure. By such means extremely rapid re-use of moulds is possible with, at the same time, the production of better surfaces. The second is the use of cement-sand grout in conjunction with pre-packed coarse aggregate. For work where aggregate of greater size than 1½ in. may be used the method has several advantages compared with traditional practice. It is ideal for conditions (as in large retaining walls and quays) where very large pieces of stone may be incorporated in the work. Concreting by this method should be speedy; the work is divided into two parts, namely, laying the coarse aggregate and then the grouting. Each may proceed independently of the other. Only about one-third of the materials which generally have to be mixed are mixed and re-handled in this process; the remainder is dumped directly where it is required. Vibration, ramming or tamping is eliminated but normal curing is essential.

Design

In the design of reinforced and prestressed concrete present trends are towards the use of "load-factor" methods of design in which the forces and bending moments resulting from the imposed and dead loads, increased by certain factors, are compared with the ultimate strength of the members supporting them. The advantages over the methods now commonly used in which the stresses due to the assumed working loads are compared with "safe" stresses are that a more uniform factor of safety is obtained for the whole structure, and that adequate allowance is possible for non-elastic phenomena, the effects of which are extremely difficult to evaluate by traditional elastic analyses. From the point of view of the contractor the proposed methods (often called "plastic" design or "ultimate-load" design) will be advantageous in allowing a better distribution of reinforcement and thus easier placing of the concrete.

The greatest difference between the methods is seen in continuous frames and two-dimensional structures such as shells; there is little difference between freely-supported beams designed by either method. Designers welcome these developments because they simplify calculations and, even more important, allow the solution of problems intractable by the theory of elasticity. Reinforced concrete is by its nature a monolithic form of construction; without considerable difficulty it is not possible to isolate one member from another—and when this is done it frequently results in a solution which is uneconomic—thus the movement of each member affects adjacent members; it is not possible to consider the beam without the slab and where, as in a shell, the beam and slab are as one, the difficulties of elastic analyses, though not insurmountable, are very great. "Plastic" design applied to reinforced concrete makes for simpler calculations based upon known properties of materials rather than on hypothetical assumptions chosen to enable computational difficulties to be overcome.

New Methods of Construction

In the field of actual construction it is likely that there will be more and more emphasis on the use of precast elements in order to take the greatest advantages of factory production and the mechanization of erection methods. Long-span floor and roof slabs are now commonly being used in lengths up to 25 feet. Longer spans are limited largely by the ability of the contractor to handle them economically on the site. For this reason composite construction which uses relatively small prestressed precast elements, forming both a permanent shutter and "reinforcement," is popular but as larger cranes become more generally available it is likely that the use of *in-situ* concrete will be limited to forming the joints between entirely precast members, thus carrying to its logical conclusion the trend towards "dry" construction with as much work as possible done away from the site.

There is every indication that precast facing slabs will become more generally used as a cladding material, other than in such fields as that of domestic architecture where brickwork is difficult to replace both on account of cost and appearance. Factory produced, with all the advantages of concrete made under controlled conditions, the slabs are available in a wide range of colours, tones and textures suitable for use under the grey skies and subdued light of this country. Considerable research has been undertaken into the selection and preparation of aggregates and the types of surface treatment most suited to various conditions of exposure.

There have already been some most successful applications of the technique, as for example in a school at Ipswich, where profiled slabs were used most effectively. Possibly the most successful method now in use is to expose the natural aggregate. This is the oldest but still the most rewarding of techniques; its success depends mostly on the careful selection of the correct colour, texture and durability of the aggregate, but care must also be taken to ensure that the natural grey colour of the cement matrix does not mar the appearance. This can easily be avoided by using white or coloured cements.

A method popular in the USA and becoming known in this country is the aggregate-transfer method. This technique involves the selection of suitable coloured pieces of aggregate which are arranged in a pattern on a backing material such as paper, which can later easily be removed. After the pattern has thus been obtained the pieces of aggregate together with their backing are placed in the moulds with the backing downwards. The concrete is then placed and when it has hardened the slab is removed from the moulds. The backing material is removed by washing, thus leaving the pre-determined pattern of aggregate exposed. More daring treatment is suggested by the use of coloured tiles and glass as has been illustrated in photographs of some of the remarkable structures built in Brazil.

Use of concrete facing slabs for cladding leads naturally to their incorporation in load-bearing slabs forming both the face and the strength of the structure. Such methods are popular on the continent where in the reconstruction of war-devastated cities the majority of large buildings incorporate some form of construction of this nature. For office buildings and other lightly-loaded structures the system may be based on storey-height panels of precast concrete, some solid, some basically a window frame, supporting long-span prestressed precast floors without the use of beams. Possibly by prestressed vertically to form rigid frames of the walls and floors, such buildings could rapidly be erected with a minimum of site labour. Another method using the same principle would be the use of separate precast columns and lintols externally. In a more developed form designs have been made for a three-storey laboratory in which the placing of four elements provides walls and floor covering a plan area of 200 sq. ft.

Such constructional forms require special equipment for their erection and hence the design must, for economy, be carried out in close collaboration with the contractor. This is especially so for the larger and more daring precast concrete structures as those, for example, described recently in a lecture by Professor Nervi, the hangars at Marignane, and on a smaller scale the precast concrete factory illustrated. The latter two examples particularly are of structures in which the designs were to a large extent governed by the method of erection, and indicate the lines on which the most important developments will lie, that is on the closest possible collaboration between designer and constructor.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	5	6
Pit Sand	,,	1	2	11
Washed Sand	,,	1	6	1
⅜ in. Shingle	,,	1	2	5
¾ in. Broken Brick	,,	1	0	0
Pan Breeze	,,		10	3
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	9
2 yds. of fine and 2.6 yds. of coarse per ton				

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	5	1	6
1 to 6 tons, site	,,	5	13	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	12	0
1 to 6 tons do. site	,,	6	4	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots	,,	7	18	0
Other colours according to colour.				
In 4-ton lots from 295s. 0d. to 685s. 0d. per ton.				
White Portland Cement	,,	13	2	0
Under 1 ton	per cwt.		15	7
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	14	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 5s. 0d. to £14 0s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	8	3
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	8	9
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	10	0

BRICKS

Full Loads.

		£	s.	d.
First Hard Stocks	per 1,000	11	17	0
Second Hard Stocks	,,	10	16	0
Mild Stocks (Kiln Burnt)	,,	9	1	6
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations)	,,	27	5	6
Do. Bullnose (London Stations)	,,	27	19	6
Blue Wire Cuts (London Stations)	,,	24	14	0
Midhurst Lime Bricks (London sites)	,,	10	8	0
Uxbridge Whites (London sites)	,,	9	11	6
Special Purpose Sandlime Bricks (London sites)	,,	7	14	0
2½ in. Best Stourbridge Fire Bricks (London stations)	,,	26	6	3
3 in. do. (London stations)	,,	31	12	0
2½ in. Moler Flue Bricks (London sites)	,,	36	0	0
2⅜ in. Machine-made Sandfaced Red Facings (London sites)	,,	14	8	6
2⅜ in. Machine-made Multi Red Facings (London sites)	,,	14	13	6
2⅜ in. Hand-made Sandfaced Red Facings (London sites)	,,	15	6	0
2⅜ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	,,	16	1	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London sites)	,,	17	5	6
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	,,	17	5	6

		£	s.	d.
Rubber Bricks for gauged arches (London sites)	per 1,000	41	10	0
2⅜ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	13	6	0
2⅜ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	14	18	0
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 17½% for Best quality and plus 17½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District).

	Minimum lorry loads.		
Hollow Clay Partition Blocks (Keyed)			
*2 in.	140 yds.	per yd. sup.	4 4
*2½ in.	140 yds.	,,	4 7
* 3 in. (3 cavity)	120 yds.	,,	5 4
Building Blocks (Keyed)			
*3 in. (6 cavity)	110 yds.	,,	5 6
*4 in. (6 cavity)	95 yds.	,,	6 9
6 in. (8½ in. × 5⅝ in.)	1,250 blocks	per 1,000	26 6 0
* Half blocks at no extra charge.			
Clinker Concrete			
2 in.	100 yds.	per yd. sup.	3 9
2½ in.	85 yds.	,,	4 4
3 in.	75 yds.	,,	5 3
4 in.	55 yds.	,,	6 5
Cranham			
2 in.	100 yds.	,,	6 8
2½ in.	85 yds.	,,	7 4
3 in.	75 yds.	,,	8 7
4 in.	55 yds.	,,	10 7
4½ in. Load bearing quality	50 yds.	,,	11 8
Moler Partition Blocks			
2 in.	150 yds.	,,	15 6
2½ in.	120 yds.	,,	15 9
3 in.	100 yds.	,,	16 0
4 in.	90 yds.	,,	19 0
Lightweight Concrete Building and Partition Blocks of various sources of manufacture			
2 in.	100 yds.	,,	5 9
2½ in.	80 yds.	,,	6 11
3 in.	65 yds.	,,	8 1
4 in.	50 yds.	,,	9 4
4½ in.	44 yds.	,,	10 2
6 in.	33 yds.	,,	13 8
Thermalite-Ytong Partition Blocks			
2½ in.	120 yds.	,,	6 11
Thermalite-Ytong Loadbearing Insulating Blocks			
3 in.	100 yds.	,,	8 3½
4 in.	75 yds.	,,	10 9
5 in.	60 yds.	,,	13 5
6 in.	50 yds.	,,	16 1½
8 in.	37½ yds.	,,	1 1 6
9 in.	33 yds.	,,	1 4 3½
Floor Blocks and Filler Tiles			
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	33 6 0
4 in. do.		,,	35 14 0
5 in. do.		,,	42 10 0
6 in. do.		,,	47 17 0
7 in. do.		,,	58 8 0
8 in. do.		,,	68 9 0
10″ × 3″ × 5/8″ Filler Tiles in multiples of 10 tiles		per 1,000 multiples	56 15 0
12″ × 3″ × 5/8″ do.	do.	,, ,,	64 10 0
10″ × 4″ × 7/8″ do.	do.	,, ,,	71 0 0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 pieces Under 2 tons	Under 100 pieces Under 2 tons
Delivered ex Merchants Wharf or Depot			
Best Quality	—	+117½%	+130%
BSS Best do.	—	+10% +117½%	+10% +130%
Tested Quality	—	+37½% +117½%	+37½% +130%
BSS Tested do.	—	+47½% +117½%	+47½% +130%
Delivered ex Manufacturers' Works			
Best Quality	+85%	+105%	+115%
BSS Best do.	+10% +85%	+10% +105%	+10% +115%
Tested Quality	+37½% +85%	+37½% +105%	+37½% +115%
BSS Tested do.	+47½% +85%	+47½% +105%	+47½% +115%

STONEWARE DRAIN PIPES, etc.—*continued*

		£	s.	d.
3 in.	Land Drain Pipes (in 12 in. lengths) ... per 1,000	10	2	6
4 in.	do. ... ... ,,	14	9	6
6 in.	do. ... ... ,,	29	19	0
9 in.	do. ... ... ,,	57	5	0

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.			3	1
Asbestos base ditto 7 lb. per yd. sup. do. do. ,,			5	0
Lead lined bitumen ditto 9½ lb. per yd. sup. do. ,,			11	3
18 in. × 9 in. British damp course slates ... ... per 1,000		38	6	0
14 in. × 9 in. do. do. ... ... ,,		29	11	0
9 in. × 9 in. do. do. ... ... ,,		18	2	6
18 in. × 4½ in. do. do. ... ... ,,		17	15	6
14 in. × 4½ in. do. do. ... ... ,,		14	1	9
9 in. × 4½ in. do. do. ... ... ,,		9	7	6

STONE

Bath Stone—				
Monks Park ... ... per ft. cube			8	0
St. Aldhelm Box Ground ... ... ,,			9	0
Delivered in railway trucks at South Lambeth B.R. Western Region.				
Doulting Stone Random Blocks. Delivered London area ,,			8	9
Beer Stone. Delivered London area ... ... ,,			8	3
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... ,,			8	3½
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube		3	10	8
12 in. × 6 in. do. do. ... ... ,,		2	10	6
12 in. × 3 in. Plain coping, twice throated ... ,,		1	19	0
12 in. × 3 in. Weathered and twice throated coping ,,		2	12	0
14 in. × 6 in. do. do. ... ... ,,		2	7	0
4½ in. × 9 in. Plinth, rubbed on top and face ... ,,		2	2	0
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.			7	6
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube		1	5	9
Do. do. fair one edge for fair faced brickwork ... ... ,,		1	10	6
Hard York—				
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run			9	0
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube		2	8	0
12 in. × 6 in. Plain Steps, rubbed top and front ,,		2	2	0
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.			8	6
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.		2	19	3

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000.				
Machine-made Pantiles and French pattern Tiles from Lincolnshire district		29	8	0
Hand-made Pantiles Berkshire district		50	9	0
Hand-made Double Roman Bridgwater district		58	13	6
Hand-made 10½ × 6½ tiles Berkshire district		14	1	6
Machine-made 10½ × 6½ Staffordshire district		13	18	9
Hand-made Hip and Valley tiles per doz.		1	10	0
Machine-made Hip and Valley tiles do.		1	8	0
Concrete tiles 10½ × 6½		8	1	6
do. Interlocking (49S)		19	0	0

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.				
24 × 12		124	17	4
22 × 12		103	13	8
22 × 11		93	13	6
20 × 12		88	9	0
20 × 10		82	7	9
18 × 10		59	12	9
18 × 9		52	14	6
16 × 10		49	1	3
16 × 8		38	3	8

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—				
Joinery quality ... ... Ex. Wharf per standard		£110 to £135		
Carcassing quality ... ... do. ,,		£98 to £102		
1 in. Tongued and Grooved Flooring do. ,,		£108	0	0
Hardwood—				
Mahogany—African S.E. ... do. per ft. cube		1	10	0
do. Honduras do. ... do. ,,		3	5	0
Oak European do. ... do. ,,		2	5	0
do. Japanese do. ... do. ,,		2	10	0
do. English Logs sawn ... do. ,,		1	17	6
Teak 8 in. average S.E. ... do. ,,		3	15	0
Walnut African Logs sawn ... do. ,,		1	5	0

DOORS (in Lots I-II)

		£	s.	d.
Delivered London area.				
1¼ in. 4 Horizontal Panel. Pattern 4 in. deal				
2 ft. 0 in. × 6 ft. 6 in. ... ... each		1	12	0
2 ft. 3 in. × 6 ft. 6 in. ... ... ,,		1	13	0
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,		1	14	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,		1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal				
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,		2	9	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,		2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal				
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,		2	1	9
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,		2	3	6

SUNDRIES

Delivered London area.				
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.			5	8
1½ in. do. (67 yds. to 1 ton) ... ... ,,			7	4
2 in. do. (52 yds. to 1 ton) ... ... ,,			8	11½
2½ in. do. (45 yds. to 1 ton) ... ... ,,			10	3
3 in. do. (39 yds. to 1 ton) ... ... ,,			11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.				
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.		2	2	6
¼ in. Hardboard do. ... ... ,,		2	1	6
5/16 in. do. do. ... ... ,,		3	2	6
5/16 in. Asbestos Flat Building Sheets ... ... per yd. sup.			3	7
¼ in. do. ... ... ,,			4	9
Roofing Felt, 1-ply ... ... ,,			1	6
do. 2-ply ... ... ,,			1	9
Best Scotch Glue in slabs ... ... per ½ cwt.		5	0	0
do. pearl ... ... ,,		5	5	0
Croid Glue ... ... 28 lb.		2	6	0
Cut Nails 3 in. (1-ton lots) ... ... per ton		64	10	0
do. 4 in. and up (1-ton lots) ... ... ,,		61	0	0
Wire Nails, 3 in. (4-cwt. lots) ... ... per cwt.		3	0	9
do. 4 in. and up (4-cwt. lots) ... ... ,,		3	0	3

METALS

Steel Joists, Etc.

Basis Joists—				
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton		41	0	0
Extra for sizes				
3 in. × 1½ in. 4 in. × 1¾ in. ... ... ,,		3	10	0
3 in. × 3 in. ... ... ,,		2	10	0
4 in. × 3 in. 10 in. × 4½ in. ... ... ,,		1	10	0
5 in. × 2½ in. 5 in. × 3 in. ... ... ,,		1	15	0
4¾ in. × 1¾ in. ... ... ,,		3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ,,			15	0
6 in. × 3 in. 24 in. × 7½ in. ... ... ,,		2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. ,,		1	5	0
9 in. × 4 in. 10 in. × 5 in. ... ... }				
12 in. × 5 in. 22 in. × 7 in. ... ... } ,,		1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in. }				
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. }				
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. } ,,			10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in. }				
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in. }				
Steel angles average price ... ... ,,		42	15	0
Steel tees average price ... ... ,,		43	15	0
Fabricated work delivered London—				
R.S. Joists cut and fitted ... ... ,,		57	10	0
Compound girders ... ... ,,		63	5	0
Stanchions ... ... ,,		68	10	0
Compound stanchions ... ... ,,		72	10	0
In Roof Work—Trusses and Purlins ... ... ,,		85	10	0
Average prices not for awkward work.				
Angle cleats and ⅜ in., ½ in. and ⅝ in. bolts average price London area ... ... per cwt.		4	15	0

Ferro-Concrete Bars

Mild Steel Ferro-Concrete bars to BSS785 ex London				
Stock ⅝ in. diam., and upwards ... ... ,,		42	11	0
¼ in. diam. ... ... per ton extra		8	12	0
5/16 in. do. ... ... ,,		6	12	0
⅜ in. do. ... ... ,,		4	12	0
½ in. do. ... ... ,,		3	2	0

Mild Steel Tubes

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A + 8%		
Class B + 18⅛%	Light + 34%	Malleable List—32½% + 40%
Class C + 36¼%	Heavy + 41¼%	

Black—		
Class A — 14½%		
Class B — 2½%	Light + 21½%	Malleable List—32½%
Class C + 11¼%	Heavy + 28⅛%	

C.I. Half-round Gutters

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/5½	3/2	/11
3½ in.	3/10½	3/5	/11
4 in.	4/11½	3/10	1/4
4½ in.	5/5½	4/4	1/7
5 in.	6/1	4/8	1/11

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	4/7	4/1	1/1
3½ in.	5/1½	4/1	1/4
4 in.	5/8	4/4	1/7
4½ in.	6/1	4/11	1/11
5 in.	6/8	5/8	2/2

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	7/7	3/10	5/7
2½ in.	7/7	4/4	7/5
3 in.	8/6	5/5	8/1
3½ in.	9/8	6/4	9/8
4 in.	11/2½	7/9	11/6

L.C.C. Coated Soil Pipes

2 in.	8/7½	6/8	8/1
2½ in.	9/0½	7/4	10/1
3 in.	10/2	8/1	11/11
3½ in.	11/4½	10/1	13/11
4 in.	12/11½	11/3	16/5

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 7½% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

In 9-ft.s.

	cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	27/4	19/3	34/–
6 in.	2	0	1	40/9	51/–	81/9

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths	per yd.	3/11½	4/3	5/1½	6/9½
Shoes	each	2/7	2/10	3/4	4/6
Single Branches	„	4/–	4/9	5/8	7/11
Bends square or obtuse	„	2/10	3/1	4/–	5/8
Swan Necks 4½ in. proj.	„	3/1	4/–	4/6	6/3
do. 6 in. do.	„	3/4	4/–	5/1	6/9

Asbestos O.G. Gutters and Fittings

		4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	3/8½	4/2	4/11½	5/11½
Drop ends	each	3/–	3/6	4/1	4/10
Stop ends	„	/11	1/–	1/1	1/3
Angles	„	3/1	3/7	4/4	5/1
Nozzles	„	3/–	3/6	4/1	4/10
Union Clips	„	1/6	1/9	2/2	2/6

Asbestos Half-Round Gutters and Fittings

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	2/7½	3/1½	3/2½	3/9½	5/3½
Drop ends	each	2/2	2/7	2/10	3/1	4/6
Stop ends	„	/10	/11	1/–	1/1	1/3
Angles	„	2/6	2/10	3/1	3/4	4/6
Nozzles	„	2/2	2/7	2/10	3/1	4/6
Union Clips	„	1/1	1/2	1/3	1/5	2/1

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	43 12 6
Mild Steel Bars	40 4 0
Mild Steel Hoops	41 3 6

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	52 8 6
24 gauge	54 18 6
26 gauge	57 18 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	60 6 0
24 gauge	63 16 0
26 gauge	69 1 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	61 6 0
24 gauge	64 16 0
26 gauge	70 1 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)		£ s. d.
Sheet BS 1470 S1C 18 SWG (36 in. wide)	per lb.	2 8½
Sheet BS 1470 NS 3 Utility 18 SWG (36 in. wide)	„	2 5½
Coiled strip BS 1470 S1C 18 SWG (24 in. wide)	„	2 7½
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide)	„	2 5
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide)	„	2 10
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG	per sheet	1 9 6
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31½ in. × 20 SWG	„	1 15 0
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31½ in. × 20 SWG	„	1 8 8
Extruded section BS 1476 E1C simple moulding	per lb.	2 6
Extruded section BS 1476 E1C 1 in. diam. round	„	2 3½
Extruded section BS 1476 HE10WP simple angle	„	2 9
Extruded section BS 1476 HE10WP 1 in. diam. round	„	2 8
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG	„	4 0½
Tubing BS 1471 HT10WP 1½ in. O/D × 20 SWG	„	5 3

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

	M.O.H. All per doz.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron		87/–	128/8				
Toilet bib cocks for iron		109/–	158/5				
Screwdown stop cocks for iron		66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead		89/–	132/–	234/4	472/–	623/6	1389/6
Double nut boiler screws		18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves		77/–	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron		19/6	23/6	38/6	52/10	70/6	165/–
		1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws		33/–	40/8	59/6	92/5	118/10	155/3
Brass sleeves			31/11	31/11	56/2	74/10	91/5
			1¼ × 6 lb.	1½ × 6 lb.	2 × 7 lb.	3 × 7 lb.	
Lead P. trap with brass cleaning screws		75/–	93 9	150/–	256 3		
Lead S. trap do.		90 8	112 6	184 6	331/3		

Solder	s. d.
Plumbers'	per lb. 4 1
Tinmen's	„ 4 10
Blow pipe	„ 4 11

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 45½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.		d.
½ in. × 19 gauge	12½	Total per lb.	58½
⅝ in. × 19 „	11½	„ „	56½
1 in. × 18 „	9⅝	„ „	55⅝
1¼ in. × 18 „	9	„ „	54½
1½ in. × 18 „	9	„ „	54½
2 in. × 17 „	10⅝	„ „	56⅝

	£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras per ton	436 0 0

Zinc

		£ s. d.
Sheet Zinc 10 gauge (25 SWG)	5 cwt lots upwards per cwt.	8 17 3
do. 12 gauge (23 SWG)	„ „	8 15 6
do. 14 gauge (21 SWG)	„ „	8 14 6

Brass Tubes

		£ s. d.
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	3 0

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	163 10 0
Lead Water Pipe in coils	„	164 5 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia.	„	166 5 0
„ over 4 in. dia.	„	168 5 0
Lead Gas or Untinned Compo pipe	„	166 5 0
Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	„	4 0
1 cwt. do. 3 cwt.	„	6 0

Smaller quantities than 1 cwt. priced specially.
Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trace schedule.
Allowance for Old Lead, collected £115 10s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

		£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site	per ton	7 11 9
do. White do. do.	„	7 19 6
Sirapite Coarse do. do.	„	7 14 0
do. Fine do. do.	„	8 2 0
Blue Lias Lime in 6-ton loads	„	6 14 6
Hydrated Lime do.	„	5 17 6
Lump Lime do.	„	5 7 0
White Keen's or Parian Cement in 1-ton loads	„	10 17 0
Pink Keen's or Parian Cement in 1-ton loads	„	10 11 9
Granite Chips in 6-ton loads	„	2 8 3
Hair	per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site	per yd.	2 3½
1,200 yds.	„	2 2½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site	„	2 11½
1,200 yds.	„	2 10¼
Gypsum Plaster Wall Boards, 3 and 4 ft. wide 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site	„	2 6½
1,200 yds.	„	2 5½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site	„	3 2½
1,200 yds.	„	3 1½

PAINT AND DISTEMPER

Delivered London area		£	s.	d.
Ceiling Distemper	per cwt.	1	7	6
Washable Distemper	,,	5	5	0
Gloss Paint	per gal.	2	10	0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3	11	0
LEAD PRODUCTS AND OILS				
Ground White Lead, 1 cwt. kegs	per cwt.	9	12	0
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3	10	0
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	8	1	0
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2	12	0
Size XD quality, 28 lb.	per tin		9	0
Raw Linseed Oil (5 gal.) drums extra	per gal.		14	0
Boiled Linseed Oil (5 gal.) do.	,,		14	6
SUNDRIES.				
Turpentine substitute (5 gal.) drums extra	,,		5	6½
do. do. (40 gal.) do. do.	,,		4	8½
Solignum, Brown (5 gal. cans) Exterior	,,		6	10
Creosote (40 gal. barrels)	,,		2	0
Paste Powder (1 lb. packets)	per lb.		1	6
White Lining Paper	per piece		1	0

VARNISHES, etc.

Delivered London area.				
Oak Varnish, Outside or Inside	per gal.	1	12	6
Oak Pale Copal do.	,,	1	18	0
Hard Drying Oak for Inside	,,	2	0	0
Crystal Paper Varnish do.	,,	2	0	0
Eggshell Flat Varnish do.	,,	2	14	0
Finest Carriage Varnish	,,	2	10	0
Front Door Varnish	,,	2	0	0
Japan Gold Size	,,	1	12	6
Black Japan	,,	1	14	0
Brunswick Black	,,	1	10	0
Berlin Black	,,	1	5	0
Terebene	,,	1	8	0
Knotting (1 gal. bottles free)...	,,	2	2	0
French and Brush Polish (do.)	,,	1	18	0

GLASS

Delivered London area	Per ft. super s. d.
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	6½
24 oz. ,, ,, ,, ,, ,, ,,	8¾
26 oz. ,, ,, ,, ,, ,, ,,	11
32 oz. ,, ,, ,, ,, ,, ,,	1 2¾
⅛ in. Rolled Plate	10
3/16 in. and ¼ in. Rough Cast	1 1

	Per ft. super s. d.
⅛ in. Figured Rolled and Cathedral, Standard patterns : White	10
do. Standard Tints	1 5½
do. Special Tints	2 11½
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 2
¼ in. Wired Cast	1 3½
¼ in. Georgian Wired Cast	1 3½
Hollow Glass Blocks—	Each
P.B.2 5¾ × 5¾ × 3⅞ in.	2 11
P.B.3 7¼ × 7¼ × 3⅝ in.	4 5
P.B.32 7¼ × 7¼ × 3⅝ in.	4 5
Radiused Corner Blocks to match up with—	
P.B.2	5 6
P.B.3	7 0
P.B.32	7 0
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup.	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality —Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup. or ditto	16 0
Plates exceeding 200 ft. sup. prices on application. Substances other than ¼ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s. d.
18 oz. sheet O.Q.	3,000	4⅞
24 oz. ,, ,, ...	2,000	6½
26 oz. ,, ,, ...	2,000	8¾
32 oz. ,, ,, ...	2,000	11½
⅛ in. Rolled Plate	1,000	8
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	8
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte...	1,000	11
3/16 in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	11
¼ in. Wired Cast, Hexagonal...	2,000	1 0½
¼ in. Georgian Wired Cast	2,000	1 1

The Builder

CURRENT RATES OF WAGES

AS FROM OCTOBER 3, 1955. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	4/-	3/11½	3/11	3/10½
Labourers	3/5½	3/5	3/4½	3/4

Town.	*Grade.*
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Afan Valley	A
Aldeburgh	A1
Aldershot District	A1
Alfreton UD	A
Alnwick UD	A
Altrincham	A
Amble	A
Ambleside	A2
Amersham	A1
Ammanford	A
Andover	A2
Anglesey, Isle of	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashbourne RD	A2
Ashbourne UD	A2
Ashby-de-la-Zouch UD	A
Ashby Woulds UD	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington UD	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone RD	A
Attleborough	A2
Axminster	A2
Aylesbury	A2
Aylesham	A2
Bagshot	A2
Bakewell UD	A2
Banbury	A1
Bangor	A2
Barnard Castle UD	A
Barnoldswick UD	A
Barnsley CB	A
Barnstaple	A2
Barrow-in-Furness	A
Barrow-upon-Soar RD (exc. Thrussington A2)	A
Barry	A
Basford RD (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley MB	A
Baxterley	A1
Beaconsfield District	A
Bearl	A
Beccles	A2
Bedale RD	A
Bedford	A
Bedlington	A
Bedlingtonshire UD	A
Bedwas	A
Beeston & Stapleford UD	A
Belper UD	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley MB	A
Bewdley MB	A
Bexhill-on-Sea	A2
Bideford	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham UD	A
Bilsthorpe	A
Bilston MB	A
Birchington	A2
Birkenhead	*
Birmingham CB	†A
Bishop Auckland UD	A
Bishop's Stortford	A
Bishops Castle MB	A2
Bispham	A
Blackburn	A
Blackpool	A
Blackwell RD	A
Blandford	A2
Blaydon UD	A
Blidworth	A
Blyth B.	A
Bodmin	A2
Bognor Regis	A2
Boldon UD	A
Bolsover UD	A
Bolton	A
Boston MB	A
Bourne End	A
Bournemouth District	A
Brackley MB	A2
Bracknell	A2
Bradford CB	A
Bradford-on-Avon	A2
Braintree	A1
Brandon & Byshottles UD	A
Brecon—Borough of	A1
Breconshire, County of ...	‡A2
Brent Knoll	A2
Brentwood	A
Bridgend	A
Bridlington MB	A
Bridlington RD	A1
Bridgnorth MB	A1
Bridgnorth RD	A2
Bridgwater	A1
Brierfield	A
Brighouse MB	A
Brighton & Hove	A
Bristol District	A
Broadstairs	A2
Bromsgrove UD	A
Broughton, Flint	A
Buckfastleigh	A2
Buckingham	A2
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnham-on-Sea	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Caernarvon	A2
Caernarvonshire, Cnty. of	‡A2
Calder Valley	A
Camberley District	A2
Cambridge	A
Cannock UD	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A

Continued on page 110.

CURRENT RATES OF WAGES—Continued

Town.	Grade.
Carlton UD	A
Carmarthen—Borough of	A1
Carmarthenshire,Cnty of ‡	A2
Carnforth	A
Castleford UD	A
Caterham	A
Chapel-en-le-Frith	A
Chard	A2
Charmy Down	A
Chatham District	A
Chatteris	A2
Cheadle (Staffs) RD	A2
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chester-le-Street UD	A
Chesterfield MB	A
Chesterfield RD	A
Chichester	A2
Chipping Norton	A2
Chipping Sodbury	A2
Chippenham (inc. Chippenham Within and Hardenhuish)	A2
Cirencester	A2
Chorley	A
Clacton	A1
Clay Cross UD	A
Cleethorpes MB	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville UD	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett UD	A
Conway	A1
Corby UD	A
Cornwall, County of	‡A2
Corsham District	A
Coventry CB	A
Cranbrook	A2
Cranleigh	A2
Cranwell Aerodrome Site	A1
Crawley	A
Crewe	A
Crewkerne	A2
Cromer	A1
Crook and Willington UD	A
Crowborough	A2
Cuckfield	A2
Cwmbran	A
Dalton-in-Furness	A
Darlington CB	A
Dartmouth	A2
Darwen	A
Daventry MB	A2
Deal	A2
Denbigh Town	A2
Derby CB	A
Devizes	A2
Devon, County of	‡A2
Dewsbury CB	A
Didcot	A2
Diss	A2
Doncaster CB	A
Dorchester	A2
Dorking	A
Dorset, County of (excepting Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield UD	A1
Drigg & Carleton	A
Droitwich MB	A
Dudley CB	A
Dunstable	A
Durham B	A
Eastbourne	A
E. Glam. & Mon. Val	A
East Grinstead District	A2
East Kesteven RD	A2
East Retford MB	A
Eastwood (Notts) UD	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Evesham MB	A2
Exeter	A
Exmouth	A2
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey UD	A
Fleetwood	A
Flint MB	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough UD	A
Gateshead CB	A
Gillingham (Dorset)	A2
Gillingham (Kent)	A1
Glastonbury & Street	A2
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of ‡	A2
Godalming	A2
Goole, MB	A
Goole RD (part—Airmyn, Hook)	A
Gosport	A
Grantham MB	A
Gravesend	A
Grays Thurrock UD Area	A
Great Yarmouth	A
Grimsby CB	A
Grimsby RD (part)	A
Guildford District	A2
Halesowen MB	A
Halifax CB	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate MB	A
Hartlepool B	A
Harwell	A2
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts)	A
Havant	A
Haywards Heath	A2
Heanor UD	A
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham RD	A
Hexham UD	A
Heysham	A
Heywood	A
Higham Ferrers MB	A
High Wycombe	A
Hinckley UD	A
Hitchin	A
Hoddesdon	A
Holywell	A
Horley	A2
Horncastle UD	A2
Horsham	A2
Horwich	A
Huddersfield CB	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkeston MB	A
Ilkley UD	A
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Ilfracombe	A2
Jarrow B	A
Keighley MB	A
Kendal	A
Kenilworth UD	A
Kettering MB	A
Keynsham	A
Kidderminster MB	A
Kingskerswell	A1
King's Lynn	A1
Kingsteignton	A1
Kirkham	A
Knaresborough UD	A
Knutsford	A
Lancaster	A
Leamington MB	A
Leatherhead	A
Leeds CB	A
Leek UD	A
Leicester CB	A
Leighton Buzzard	A1
Leiston	A2
Leominster	A2
Letchworth	A
Lewes	A2
Lichfield MB	A
Lincoln CB	A
Liskeard	A2
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly (incl. Llanelly RD)	A
Llanfairfechan	A2
Llangollen	A2
London	*
Long Eaton	A
Looe	A2
Loughborough MB	A
Louth MB	A1
Lowestoft	A
Loxton	A2
Ludlow MB	A2
Ludlow RD	A2
Luton	A
Lyme Regis	A2
Lyneham (Devon)	A2
Lytham	A
Macclesfield	A
Maidenhead	A
Maidstone	A
Maldon (Essex)	A1
Maltby UD	A
Malton UD	A2
Malvern UD	A1
Manchester	A
Manningtree	A1
Mansfield MB	A
March	A2
Margate	A2
Market Harborough RD	A1
Market Harborough UD	A
Market Rasen UD	A2
Martock	A2
Maryport	A
Matlock UD	A
Melksham	A2
Melton Mowbray UD	A1
Merionethshire	A2
Merthyr	A
Mexborough UD	A
Middlesbrough CB	A
Middleton	A
Middlewich	A
Mildenhall	A2
Milford Haven UD	A1
Minehead	A2
Monmouth—Borough of	A1
Monmouthshire	A1
Morecambe	A
Moreton Valence	A2
Morley	A
Morpeth B	A
Morpeth RD	A
Mundesley	A2
Nantwich	A
Neath & Valley	A
Nelson	A
Newark MB	A
Newbury	A2
Newcastle-on-Tyne CB	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newquay	A2
Newton Abbot	A1
Normanton UD	A
Northallerton District	A
Northallerton UD	A
Northampton CB	A
North Shields	A
North Walsham	A2
Northwich	A
Norton Radstock	A1
Norwich	A
Nottingham CB	A
Nuneaton MB	A
Oakham RD	A2
Oakham UD	A2
Okehampton	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett & Horbury	A
Oswestry	A2
Oundle UD	A2
Oxford	A
Oxted	A1
Padstow	A2
Paignton	A1
Par	A2
Pembrokeshire (except Milford Haven)	A2
Penmaenmawr	A2
Penrith UD	A1
Penzance	A2
Peterborough, Soke of (Eastern Regional portion)	A1
Petersfield	A2
Pickering	A2
Plymouth	A
Pontefract MB	A
Pontypool & District	A
Pontypridd District	A
Porthcawl	A
Portishead	A
Portland Bill	A1
Portsmouth	A
Port Talbot	A
Preston	A
Princetown	A2
Pudsey MB	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Raunds UD	A
Rayleigh	A
Reading	A
Redcar B	A
Redditch UD	A
Redhill & Reigate	A
Rhondda Valley	A
Richmond B (Yorks)	A
Ripon MB	A2
Rochdale	A
Rochester	A1
Ross-on-Wye	A2
Rossendale Valley	A
Rotherham CB	A
Royston	A1
Rugby MB	A
Rugeley UD	A1
Rushden UD	A
Saffron Walden	A2
St. Albans	A
St. Austell	A2
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sandy	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough MB	A
Scunthorpe MB	A
Seaford & Newhaven	A2
Selby UD	A
Sevenoaks	A
Shaftesbury	A2
Sheerness	A2
Sheffield MB	A
Shepton Mallet	A2
Sherborne	A2
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury MB	A
Sirhowy Valleys	A
Sittingbourne	A2
Skegness UD	A1
Skipton UD	A
Sleaford UD	A1
Slough, Windsor & Eton District	A
Smethwick CB	†A
Snettisham	A2
Solihull UD	A
Somerset, County of	‡A2
Southampton and Eastleigh	A
Southend-on-Sea Dist	A
Southport	A
South Shields CB	A
Southwold	A2
Spalding UD	A1
Stafford MB	A
Staines	A
Stamford MB	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton RD	A
Stockton-on-Tees B	A
Stoke-on-Trent CB	A
Stoke Orchard	A1
Stourbridge MB	A
Stourport UD	A
Stowmarket	A1
Stratford-on-Avon MB	A
Stroud (RD Area)	A1
Sunderland CB	A
Sunningdale	A1
Sutton Coldfield MB	A
Swadlincote UD	A
Swaffham	A2
Swanage District	A1
Swansea	A
Swindon District	A
Swinton UD	A
Tamworth MB	A
Taunton	A2
Tavistock	A2
Tenterden	A2
Teignmouth	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thirsk RD	A
Thorpe Bay	A
Thurrock UDC Area	A
,, North of to Billericay	A
Tilbury	A
Todmorden MB	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Tring	A2
Trowbridge	A2
Truro	A2
Tunbridge Wells	A1
Tynemouth CB	A
Ulverston	A
Uppingham (Salop)	A1
Uttoxeter RD	A2
Uttoxeter UD	A1
Wakefield CB	A
Wakefield RD	A
Wallsall CB	A
Wallsend B	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick MB	A
Wednesbury MB	A
Wellingborough UD	A
Wellington UD	A
Wellington (Somerset)	A2
Wells (Norfolk)	A2
Wells (Somerset)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich CB	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
West Hartlepool CB	A
Westmorland (except Kendal)	A2
Weston-super-Mare	A1
Weybridge	A
Weymouth (including Portland Bill, excluding Portland Stoneyards)	A1
Whitby UD	A1
Whitby RD	A1
Whitehaven	A
Whitley & Monkseaton UD	A
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Wilmslow	A
Wilts. County of	‡A2
Wimborne	A1
Wincanton	A2
Winchester	A1
Windermere	A2
Wisbech	A2
Witham	A1
Withernsea UD	A
Woking	A1
Wokingham	A2
Wolverhampton CB	A
Wolverton District	A2
Woodbridge	A2
Woodhall Spa UD	A
Woodstock	A2
Worcester CB	A
Workington	A
Worksop MB	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
Yate	A2
Yeovil Borough	A1
York CB	A
Ystalyfera	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 4s. 1½d.; Labourers, 3s. 7d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 4s. 1d.: Labourers, 3s. 6½d. †Plus 2d. per working day. ‡This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 3s. 1½d. per hour. Women engaged on work other than craft processes, 2s. 9½d. per hour.

For Building Trade Wages in Scotland see page 118

HOUSE PURCHASE

Land Scarce and Costly

MR. ENOCH POWELL, MP, Parliamentary Secretary to the Ministry of Housing and Local Government, was guest of honour at the luncheon which followed the annual meeting of the Federation of Registered House-Builders held at the Dorchester Hotel, London, on January 5.

MR. GEORGE W. REED, retiring President of the Federation, proposing the health of the guests, said that during 1955 private housebuilders had fully justified the Government's confidence and had produced more houses for sale than in any year since before the war. "Our aim," said Mr. Reed, "is to make home-ownership a good and worthwhile investment for all classes of wage earners. There are, however, three main obstacles in the way. They are:

"1. Much suitable land has been 'sterilised' for house-building purposes, with the result that the sites that are available are too costly, even for most higher income group purchasers. While we agree with the general principle of green belts, too rigid adherence to this policy is making house-building land even more scarce and costly.

"2. House purchasers save the country money by housing themselves without subsidy, but the credit policy of the Government seems likely to deter rather than encourage the expansion of private house-building, from the point of view of both purchasers and builders.

"3. Legal costs for new houses on an estate, where work is often repetitive, are too high. Stamp duty on new houses should be abolished. These costs represent a heavy cash item for young people, often of modest means, who are starting on the all-important business of making a home."

Unless those matters were looked into the smooth expansion of the private house-building programme was bound to be affected, said Mr. Reed.

Voluntary Standards

Responding, MR. POWELL said that he had noted the points made and if his Minister was not fully acquainted with them already, as he strongly suspected might be the case, he would certainly draw his attention to them! In recent years there had been an enormous advance by technicians in the widest sense (and in that word he included builders). Legislation could establish standards but—and let there be no mistake about it!—only techniques could enable them to be realised and implemented on the widest scale. It was that improvement in technical ability which enabled the old code of building by-laws which had acted as a strait-waistcoat to be replaced with something more in keeping with the times.

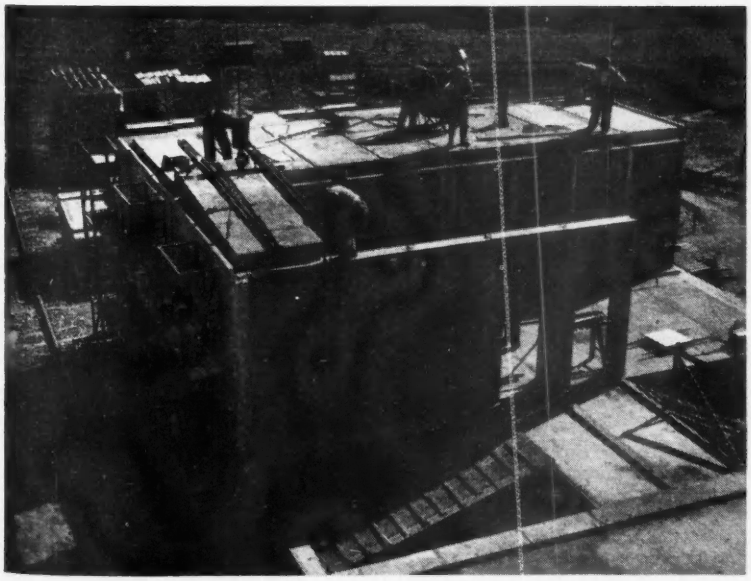
"I have been speaking of those standards empowered by law," added the Parliamentary Secretary, "but there is a different kind of standard, that which an industry sets itself, a voluntary standard. It is when a body such as the Federation of Registered House Builders sets itself the aim of realising a standard higher than that laid down by law that the fullest progress is made, and it is in that light that I wish your Federation every success in its work in the year ahead."

MR. FRANK RUSSON, incoming President, thanked Mr. Powell on behalf of the company present.

At the annual meeting, held earlier, the following were elected to office for 1956: President: Mr. Frank Russon (Birmingham); Senior Vice-President: Mr. C. R. Setter, JP (Bristol); Junior Vice-President: Mr. Idris W. Owen (Stockport); and Immediate Past President: Mr. George W. Reed (London).

FOAM-SILICATE PREFABS IN HUNGARY

Experimental building o houses from prefabricated sections made of foam-silicate is going on in Hungary. The foam-silicate slabs incorporate fine ash from power stations and baked lime, with the addition of chemicals to make the mixture foam. They are placed in moulds and dried in ten hours at 220° F. In the accompanying pictures workmen are seen erecting the first experimental building—of 24 flats in three storeys—in Budapest. Planning engineers are Gyula Mátrai and Károly Pászti.



PORTLAND CEMENT

Record Production in 1955

PORTLAND CEMENT production for the year 1955 amounted to 12½m. tons, of which 10¾m. tons were delivered to the home market, states the Cement Makers' Federation. Both these totals are the highest ever and continue the record of increased production and home deliveries for the tenth consecutive year. Home deliveries exceeded those for 1954 by 680,000 tons.

Exports for 1955 equalled those for 1954 at 1¾m. tons, in spite of serious losses of tonnage caused by the dock strikes.

HUMBER PORTS

£2m. Improvements Proposed

THE British Transport Commission announce details of the improvement works, involving a total expenditure of over £2,000,000, which have been authorised for the Humber ports.

At Hull, the principal scheme will involve the expenditure of £1,500,000 on the provision of a riverside quay, and on reconstruction of the south side of Albert Dock, to replace facilities destroyed by enemy action during the last war.

Sir Bruce White, Wolfe, Barry and Partners have been appointed consulting engineers and it is hoped that the scheme will be completed early in 1958.

Further schemes approved by the Commission at the Humber ports are:

HULL: Reconstruction of St. Andrew's Dock wall and fish market estimated to cost £170,000. An expenditure of £83,000 has been approved on two schemes for Alexandra Dock. The first is for the resurfacing of No. 21 Quay in concrete for a length of 600 ft. and a width of 50 ft.; the second is for the reconstruction and widening to 30 ft. of roadway at the south end of the dock.

IMMINGHAM: Extensive repairs estimated to cost £150,000 are to be carried out to the Eastern Jetty, involving renewal of piles, bracings and decking.

GOOLE: Victoria Pier to be reconstructed for a length of 740 ft. at an estimated cost of £113,000, involving the renewal of piles, decking and fendering as necessary.

CRAWLEY NEW TOWN

Work of Ad Hoc Committee

Mr. F. W. Hill, MBE, of Bognor Regis—a Past President of the Southern Counties Federation of Building Trades Employers and a member for many years of the Southern Counties Regional Joint Committee—has been chairman of the Special Ad Hoc Sub-Committee for Crawley New Town since its inception in 1950.

On January 4, when the sub-committee's third informal buffet luncheon was held at Crawley, his work in this important office was most warmly commended by Sir Thomas Bennett, KBE, FRIBA, Chairman of the Development Corporation. Speaking to a gathering of building trades employers, trade union officials and representatives of the operatives on the sites in the New Town, Sir Thomas also referred appreciatively to the manner in which the discussions of the sub-committee had assisted the progress and smooth-running of contracts for the Corporation, and praised the efforts during 1955 of all sections of the Building Industry.

Brief speeches of thanks to Sir Thomas were made by Mr. Hill and by Alderman C. G. Blanchard, OBE, JP, Operatives' regional secretary.

Frozen and Burst Pipes

The Metropolitan Water Board has issued a leaflet which lists measures that householders can take to prevent frozen and burst pipes. The leaflet is entitled "Precautions to Prevent Waste of Water," and can be obtained from any of the Board's offices or The Clerk of the Board, New River Head, Rosebery-avenue, London, EC1.

PROTECTION FROM THE WEATHER.—This photograph, which has been sent us by a reader recently in Italy, shows sheets of plaited straw fixed to the scaffolding around a building in Milan to protect workmen from the sun and rain, and also to prevent tools and materials falling on the heads of the public. Is there a chance here for farmers' waste straw?

NEW COMPANIES

THE FOLLOWING NEW COMPANIES, registered in England, have been announced by Jordan and Sons, Ltd., company registration agents.

D. C. Hunt, Ltd. (557319.) Regd. November 15, 33, Beeches-rd., West Row, Bury St. Edmunds. Bldrs. and contrs. Nom. cap.: £2,000. Permt. dir.: D. C. Hunt.

F. Taylor & Son (Birmingham), Ltd. (557371.) Regd. November 16. 36, High-st., Smethwick, Staffs. Bldrs., etc. Nom. cap.: £100. Dir.: F. Taylor.

Geo. Monkman & Son, Ltd. (557373.) Regd. November 16, Nowell-la. Works, Nowell-la., Leeds. Bldrs. and contrs. Nom. cap.: £12,000. Dir.: G. H. Monkman.

J. G. Tilbury, Ltd. (557378.) Regd. November 16, 4/4a, Boscobel-pl., Eaton-sq., SW1. Bldrs. and decorators. Nom. cap.: £7,000. Dir.: J. G. Tilbury.

C. L. Blow, Ltd. (557412.) Regd. November 17, 90, New-rd., Rumney, Cardiff. Bldrs., etc. Nom. cap.: £1,000. Dir.: C. L. Blow.

Steel-Lovet, Ltd. (557498.) Regd. November 18, 149, Queslett-rd. East, Streetley, Sutton Coldfield, Warwicks. Bldrs., bldg. contrs., etc. Nom. cap.: £1,000. Dir.: B. J. Poole.

Fred Chick, Ltd. (557468.) Regd. November 18, 35, Painswick-rd., Cheltenham. Bldrs. and contrs., etc. Nom. cap.: £2,000. Dir.: F. J. Chick.

G. Eburn & Son, Ltd. (557470.) Regd. November 18, 138, Queens-rd., Buckhurst Hill, Essex. Bldrs., etc. Nom. cap.: £1,000. Dir.: G. E. Eburn.

Knapman Bros. & Sons, Ltd. (557476.) Regd. November 18, 157, Blatchcombe-rd., Paignton, Devon. Bldrs. and contrs., etc. Nom. cap.: £2,400. Permt. dir.: D. Foote Knapman.

Percy Jones (Rhyl), Ltd. (557493.) Regd. November 18, The Towers Estate, Pen-y-Cefndy, Rhyl, Flints. Bldrs., etc. Nom. cap.: £1,000. Dir.: P. Jones.

S. Steventon & Co., Ltd. (557536.) Regd. November 19, 81, Perry Hill, SE6. Bldrs., bldg. contrs., etc. Nom. cap.: £100. Dir.: S. Steventon.

Fashion Fronts, Ltd. (557506.) Regd. November 19, 75, Atlantic-chbrs., 7, Brazennose-st., Manchester, 3. Bldrs., shopfitters, carpenters, etc. Nom. cap.: £1,000. Dir.: C. I. Abrahams.

G. Lacey & Sons, Ltd. (557567.) Regd. November 21, Duke-rd., Princes Risborough, Bucks. Bldrs., contrs. and decorators, etc. Nom. cap.: £10,000. Dir.: D. G. Pickup.

Durmac Construction Co., Ltd. (557672.) Regd. November 23, 569/71, Lea Bridge-rd., E10. Bldrs. and civil engrs., etc. Nom. cap.: £1,000. Dir.: E. Durkin.

R. S. Blackmore & Co. (Bristol), Ltd. (557676.) Regd. November 23, 5, West Town-gr., Brislington, Bristol, 4. Bldrs. and contrs., etc. Nom. cap.: £100 Dir.: R. S. S. Blackmore.

L. E. G. Bishop & Sons, Ltd. (557590.) Regd. November 22, Homelea, Grange-rd., Bishopworth, Bristol. Bldrs. and contrs. Nom. cap.: £10,000. Dir.: L. E. G. Bishop.

Oliver Bros., Ltd. (557700.) Regd. November 24, 32, Park-rd., Freemantle, Southampton. Bldrs. and contrs., etc. Nom. cap.: £1,000. Dir.: W. W. Oliver.

S. and P. Pratt, Ltd. (557789.) Regd. November 25, 3, Hylands-way, Hornchurch, Essex. Bldrs., etc. Nom. cap.: £3,000. Dir.: A. G. Pratt.

County Developments, Ltd. (557792.) Regd. November 25, 37/8, Chancery-la., WC2. Bldrs., decorators, etc. Nom. cap.: £1,000. Dir.: L. Marsden.

E. J. and A. Tredget, Ltd. (557737.) Regd. November 25, 53, Ingrave-rd., Brentwood. Bldrs., etc. Nom. cap.: £4,000. Dir.: E. J. Tredget.

Eke (Builders), Ltd. (557738.) Regd. November 25, 64/65, St. Marys Butts, Reading. Nom. cap.: £1,000. Dir.: F. H. W. Eke.

Marcham (Builders), Ltd. (557754.) Regd. November 25, 64/65, St. Marys Butts, Reading. Nom. cap.: £100. Dir.: Hilda M. Eke.

D. Scuffham, Ltd. (557822.) Regd. November 26, The Estate Office, Brant-rd., Lincoln. Bldrs., etc. Nom. cap.: £100. Dir.: D. Scuffham.

J. G. Moore & Co., Ltd. (557846.) Regd. November 28, Ashby-rd., Shepshed, Leics. Bldrs. and contrs., etc. Nom. cap.: £1,000. Dir.: E. A. Gibson.

Nepcote Estates, Ltd. (558016.) Regd. November 30, 194, Tarring-rd., Worthing, Sussex. Bldrs., etc. Nom. cap.: £2,000. Dir.: R. G. Cheal.

George Hinchliffe (Glendene Joinery), Ltd. (557896.) Regd. November 29, Carr Pit-rd., Moldgreen, Huddersfield. Bldrs., etc. Nom. cap.: £5,000. Dir.: G. Hinchliffe.

Jotcham & Kendall, Ltd. (557903.) Regd. November 29, The Tamarisks, Wotton-under-Edge, Glos. Bldg. contrs., etc. Nom. cap.: £5,000. Dir.: J. M. Jotcham.

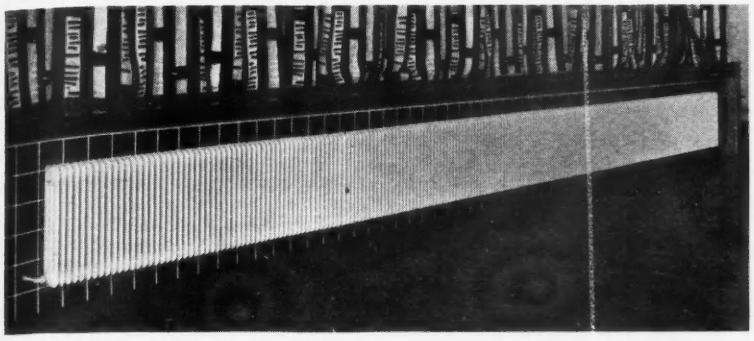
G. H. Kennard & Son, Ltd. (557946.) Regd. November 29, Heathcote-rd., Whitnash, Warwicks. Bldrs., bldg. and public works contrs., etc. Nom. cap.: £5,000. Dir.: G. H. Kennard.

Rogers & Wood, Ltd. (557992.) Regd. November 30, 12, Wood End Green-rd., Hayes, Middx. Bldrs., bldg. contrs., etc. Nom. cap.: £500. Dir.: L. Gower Wood.

Henry Edwards & Sons (Holyhead), Ltd. (558002.) Regd. November 30, Brymeirion, Bryngwran, Anglesey. Bldrs. and contrs. Nom. cap.: £1,500. Dir.: J. Edwards.

Charsley, Ltd. (558062.) Regd. December 1, 1, Cecil-st., Carlisle. Bldrs. and contrs., etc. Nom. cap.: £1,000. Dir.: R. C. Sutcliffe.

The Builder Review of PLANT & MATERIALS



THE provision of adequate heating surface on limited wall space was achieved in the assembly hall of the LCC's new "Dick Sheppard" secondary school for girls, Tulse Hill, by the use of column radiators on the forestage. With almost half of the hall's two exterior walls in glass, the forestage was one of the few clear spaces available. Light-weight column radiators produced by Gulf Radiators, Ltd., 229, Regent-street, W1, were mounted on its front; four radiators of 47 sections each being employed to provide a total heating surface of 376 sq. ft. To retain continuity of line, three dummy sections were inserted between the actual heating radiators.

Surface Rendering

A SURFACE rendering consisting of selected materials, cement and other constituents, which has already been in wide use in Scandinavia for more than 25 years, is now being marketed in this country by Mineralite, Ltd., 55-56, Dingwall-road, Croydon, Surrey. It can be applied to *in situ* or precast concrete, brickwork or clay blocks, or to almost any sound surface including timber (with an independent wiring key for rendering). It is also suitable as a facing to precast concrete cladding slabs, ashlar, moulded work and structural units, and while it forms a permanent decorative finish which is largely self-cleansing and water-resistant, it is claimed to be completely non-crazing. Among the architects and local authorities to specify this product are the London County Council, who are understood to have used nearly £50,000 worth of applied Mineralite and precast Mineralite-faced units on one site alone.

Oil-fired Boiler

A fully automatic oil-fired boiler has been developed by the oil-burner division of Cyril Kieft and Co., Ltd., 13, Dudley-road, Wolverhampton. Fitted with a self-lighting oil burner with an output of 65,000 BTUs, it provides instant hot water and will heat up to six radiators without the need for stoking or other attention. When the water has reached the required temperature, the burner automatically extinguishes itself, relighting only when required. A special design of heating surface and a steel waterway with cast-iron casing contribute to the overall efficiency of the unit, which is especially suitable for installation in larger houses and small office blocks. It can be obtained in grey mottled or light cream vitreous enamel finish.

Wallpaper Protector

A water solution which will seal wallpapers so that oil, fat and waxes, as well as non-greasy materials, will stay on the surface where they can be wiped off easily, has been placed on the market by Amalgamated Paints (London), Ltd., St. Marks-road, Mitcham, Surrey. Known as "Fend" wallpaper protector, it can be applied by brush, spray and, in some cases, roller, the paper darkening down during application sufficiently to show where the sealer has been applied—reverting to its original colour after application. Although washable, the film

LOAD-BEARING FLOORING SYSTEM

THESE SHOPS AND MAISONETTES erected at Uxbridge-road, Feltham, for Feltham UDC by the Bunting Construction Co., Ltd., incorporate a new variation of the Bison flooring system, which is understood to eliminate the need for rolled steel joists or floor beams at first floor level and to substantially reduce erection time. As soon as the walls are up to bearing level, precast prestressed concrete U-type lintel and hollow main beams carrying the inter-span loads of upper floors, walls and roofs are placed in position by mobile crane. "Bison" precast prestressed hollow floor slabs and planks are then fixed in one operation. The precast canopy soffit units bear on the lintel beams and are tied back to the floor planks by steel reinforcement and *in situ* concrete the various elements combining to form one composite unit spanning between the load-bearing walls. The exposed faces of the soffit units require no further treatment as they are factory-made with a special rubbed finished. However, the underside of the canopy can be treated for decorative purposes with emulsion paint if required. The scheme was designed by Mr. J. L. J. Grimshaw, LRIBA, AMICE, engineer, surveyor and architect to Feltham UDC, the sub-contractors for the supply and erection of the beams, canopies and floors being Concrete, Ltd., 16, Northumberland-avenue, W2.

Front elevation of the terrace, with a cross-section through the first-floor and canopy units.

is understood to be permeable by water so that treated papers can be removed prior to re-papering. The manufacturers have at the same time introduced a plastic emulsion distemper known as " Staddosheen " which, while being the same price as a standard oil-bound washable distemper, has certain of the extra qualities of an emulsion paint. Apart from those surfaces suitable for ordinary distemper, it can be used over new plaster, sand and cement screeds, once they have dried out, as it is unaffected by lime.

Timber Handling

The sorting-table method of handling imported timber cargoes, as developed by Burt Boulton and Haywood, Ltd., Brettenham House, Lancaster-place, WC2, maintains in progress the sorting and piling operations during the period of the vessel's discharge, the cargo thus being available to customers within a short time of the completion of discharge. A further advantage is that it keeps the quay area clear of timber and reduces overhead costs by speeding up the time of operation. A successful demonstration of this new method, involving the use of a " Timber Wolf " straddle carrier produced by the British Straddle Carrier Co., Ltd., was carried out on December 22 to an invited audience at the firm's Belvedere works, by the River Thames.

Trade News

" Decorama "—1956

From January 24, Arthur Sanderson and Sons, Ltd., will be holding an exhibition entitled " Decorama " 1956 in their Berners-street showrooms. This will introduce the new season's range of furnishing fabrics and the latest wallpaper productions. The centre-piece will be FLAT '56, where the Royal College of Art, under the direction of Sir Hugh Casson, gives its version of the decorating trend. The exhibition will be open until February 3.

Change of Name

The Atlas Diesel Co., Ltd., have now changed their name to Atlas Copco (Great Britain), Ltd., due to the fact that the word " diesel " is a misnomer, since the company disposed of their marine diesel engine interests in 1948, and that the world-wide development of their compressed air business has necessitated a family name for the 28 companies in the international group.

Company Merger

All materials marketed under the trade name " Warerite " are now being produced and sold by Bakelite, Ltd., 12-18, Grosvenor-gardens, SW1. The firm of Warerite, Ltd., are acting as a fully-owned subsidiary of Bakelite, Ltd., their personnel remaining as previously, with the exception that Mr. A. W. Sherwood, manager of Warerite, Ltd., will undertake duties in the Bakelite organisation as sales promotion executive.

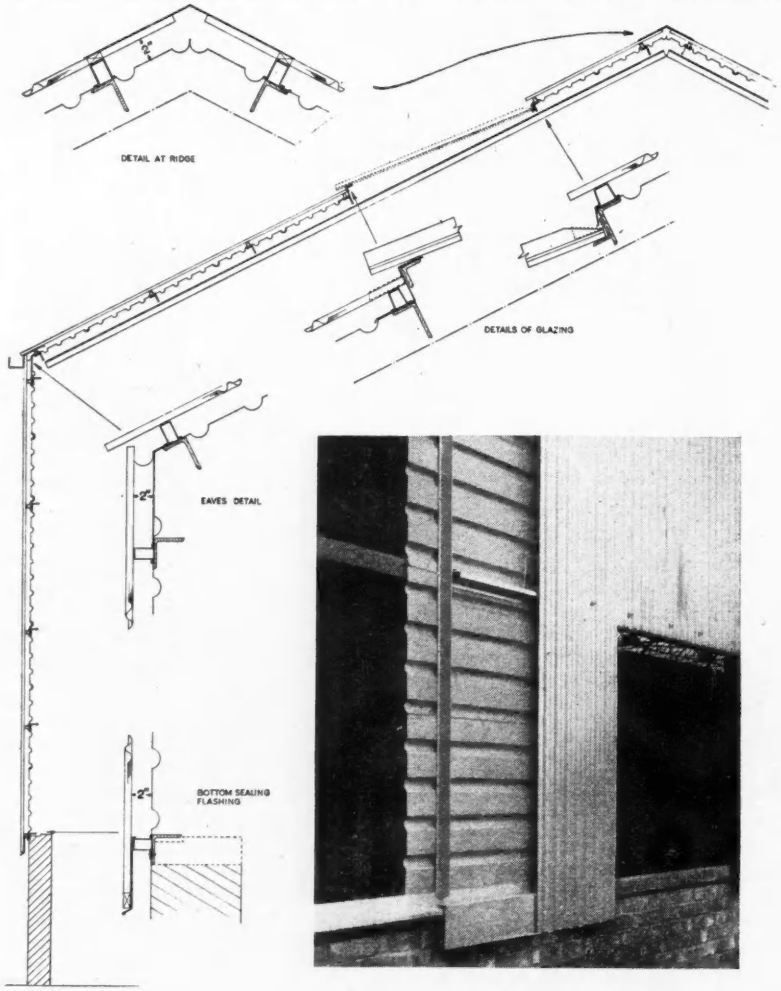
New Offices

The Northern Aluminium Co., Ltd., have opened a new sales office at 16, Cumberland-place, Southampton, Hants. (Tel.: Southampton 25425); and are to open another at 57, Bute-street, Luton, Beds. (Tel.: Luton 7364-5), on January 16. Their Manchester area sales office has now moved to larger premises at 23, Princess-street, Manchester 2 (Tel.: Central 9335).

To meet increasing demands in the Midlands for chemical resistant cements, linings and floor tiling, Corrosion Proof Products, Ltd., in conjunction with Metal Processes, Ltd., have opened an office at Nos. 758-786, Kingsbury-road, Erdington, Birmingham 24 (Tel.: Erdington 6111).

As from tomorrow (January 14), the London office of the Bath and Portland Stone Firms, Ltd., will be situated at Vincent House, Vincent-square, Westminster, SW1 (Tel.: Victoria 9182).

The offices of the Holborn Asphalte Co., Ltd., are now at 489a, London-road, North Cheam, Sutton, Surrey (Tel.: Derwent 3646/7).



ALUMINIUM WALL CLADDING

Double-Skin System

A LARGE new extrusion factory has been erected for the British Aluminium Co., Ltd., at Latchford Locks, near Warrington, Lancs. Its main building, 550 ft. long, is of steel construction designed to carry one 25 ton and two 7½ ton cranes. The truss profile is of Mansard type and allows stretches of patent glazing above the eaves together with a continuous lantern of patent glazing along the ridge. The roof has a 5 degrees slope with purlins at 6 ft. 9 in. centres, and is covered with Anderson's aluminium " E " decking comprising 19 swg corrugated aluminium decking (fabricated by the British Aluminium Company), ¼ in. insulation board covered with two layers " Rokbond " bitumen roofing and bonded in bitumen compound, with a surface dressing of bitumen and gravel.

The " Dialindre " wall cladding developed by Freeman, Morrison, Ltd., comprises a double skin of corrugated aluminium sheeting spaced 2 in. apart by folded aluminium distance pieces. The outer skin in this case is Rigidal 3 in. pitch corrugated sheet of 20 swg, and the inner skin Rigidal Mansard sheet of 24 swg with the corrugations running horizontally. This inner skin has been " Alocrom " treated to give a pleasant appearance. The " U " value of " Dialindre " double-skinned sheeting is about 0.27 and although it was not possible to ascertain the heat losses during the winter months, tests carried out during the past summer show that, on average, the temperature inside the building was 10 degrees F. lower than in an adjacent building covered with a single skin of corrugated aluminium sheeting.

News in Brief

Crystal Palace Development

IN connection with the future developments at Crystal Palace, illustrated in our issue of December 30, we have been asked to point out that the general development of the grounds, including the park restaurant and the amphitheatre, are the responsibility of the Chief Officer of the London County Council Parks Department, Mr. L. A. Huddart, FILA, assisted by Mr. C. R. V. Tandy, ARIBA, AILA, and Mr. L. J. Rickards. The National Exhibition Centre and the National Youth and Sports Centre are, of course, the responsibility of Dr. J. L. Martin, CBE, FRIBA, architect to the LCC.

Building Surveyors' Association

The Middlesex Chief Building Surveyors' Association, the members of which originally assembled to consider the effect of the model by-laws, has now been in existence for over two years. Its members represent all Local Authorities in the County of Middlesex, together with two Authorities from the neighbouring county of Hertfordshire.

The Association meets quarterly to discuss by-laws which may have more than one interpretation and to consider new methods of building construction with a view to attaining uniformity of interpretation and action throughout the county. The Secretary, to whom all inquiries should be addressed, is Mr. J. O. Vine, Chief Building Inspector of Hendon.

FIDOR Leaflets

Further supplies have been printed of the "Information for the Handyman" leaflets published by FIDOR. Sets are now available from the FIDOR Offices, 47 Princesgate, London, SW7. The titles are "New Doors for Old," "Brighten up Your Kitchen," "Modernise Your Bathroom," and "Some External Uses of Fibreboard." FIDOR also publishes a standard handbook entitled "Fibre Building Boards." This work deals with most aspects of the material, including methods of fixing and joint treatments, and contains an appendix of tables and concentrated information. The price is 5s. 6d. post free.

Water Charges

The Ministry of Housing and Local Government has issued Circular No. 74/SS on water charges. It deals with the new rating valuations due to come into force on April 1, and effects on water charges. The circular can be obtained price 3d. from HM Stationery Office.

Foreign Steel Order

In order that work on the new Colleges of Technology, Commerce and Art at Gosta Green, Birmingham, can be speeded up, Birmingham Education Committee decided on January 2 to spend an extra £6,000 on foreign steel, due to delays in British supplies. Councillor V. Turton, chairman of the Sites and Buildings Sub-Committee, said that although they had to "pay through the nose" for foreign steel, it would still save money by getting the building ready in ten months instead of waiting two or three years for British steel. The committee accepted a tender of £173,273 by Robert Douglas (Contractors) Ltd., for the foundation work of the final section of the first instalment of the scheme. This figure included the additional £6,000.

RSH and Clerks of Works

The Royal Society of Health has agreed to recognise the passing of the Institute of Clerks of Works of Great Britain, part II (final) examination as a qualification for Associateship of the Society.

Birkenhead Housing

There was some opposition recently at a meeting of Southport Council when it was decided to accept a tender by the firm of Lloyd and Cross, of Birkenhead, for 97 houses, at a cost of £167,900. It was stated that this was not the lowest tender, but Ald. W. H. Bellis, chairman of the Estates Committee, explained that the firm could give delivery of the houses in 58 weeks, as against 90 weeks by a local firm. That meant the Corporation would be receiving rents and rates 32 weeks earlier than if they accepted the lower tender, amounting to more than £4,000 additional revenue. On the other hand, the difference between the tenders was only £646.

Health Exhibition

A Health Exhibition is to be held in the Winter Gardens, Blackpool, from April 24 to 27, next, in conjunction with the annual congress of the Royal Society of Health (formerly the Royal Sanitary Institute). It is estimated that about 3,000 delegates and guests will attend. Mr. C. H. Aslin, CBE, PRIBA, is to be president of the Engineering and Architecture section of the Congress, and Mr. Desmond Heap, LLM, president, Town Planning Institute, is to be president of the Housing and Town Planning section. The Engineers and Surveyors Conference will be presided over by Mr. R. Nicholas, CBE, president, Institution of Municipal Engineers.

Blowlamp Precautions

Every year fire brigades in Great Britain are called out to more than eight hundred fires caused by the use of blowlamps. These fires often occur when blowlamps are used to burn off old paint or to burn out dry rot. The Fire Protection Association's latest bulletin deals with elementary precautions to be taken on the various occasions when the use of a blowlamp may be a possible source of danger. The bulletin also gives a list of general safety precautions to be observed anywhere where blowlamps are in use. A copy of the bulletin, entitled "Blowlamps Are Dangerous," will be supplied free from the Association at 15, Queen-street, EC4.

Concrete Mix Design

In an address to an ordinary general meeting of the London Branch of the Institute of Building Estimators, Mr. J. P. R. Jordan, of the Research and Development Division of the Cement and Concrete Association, listed the requirements of concrete mix designers generally. Mr. Jordan stated that those whose task it was to design concrete mixes preferred to be given a free hand, and to be informed of the minimum compressive strength or other requirements, although the chief desirable qualities in concrete go hand in hand with compressive strength. They also required details of the section, the amount and spacing of reinforcement, the method of compaction and some knowledge of the local aggregates. Where there was a choice, they preferred aggregate which was round and smooth rather than recrushed rocks, which tended to be slightly inferior in normal mixes because of the higher cement content necessary for a given strength and workability.

Time Saving in 1956

How often does one ring up an organisation only to find out that a round of extensions has to be made to find the person one wants? How often does one receive a letter that has been to other departments before reaching its destination? All for the lack of a name. This need has been filled in architecture and planning by a book, costing 15s., post free, published by Chantry Publications, Ltd., 63, Neal-street, Shaftesbury-avenue, WC2. It is called *Official Architecture and Planning Year Book*, 1956. It provides, in a form permitting quick reference, the names of those executive officers responsible for architectural and town planning matters in government departments—local authorities, statutory undertakings, private organisations and industrial and commercial firms.

Finnish Plywood

The Timber Trade Federation of the UK state that at a general meeting of the Association of Finnish Plywood Industry held on December 7 it was agreed to recommend to the members of the Association, as well as to the plywood mills not belonging to the Association, to curtail their production of plywood from the beginning of this year by 25 per cent. from the 1955 level. Mention was also made at the meeting of the fact that several mills had already made considerable cuts in their production in the last quarter of 1955.

IQS Examinations, 1956

Nearly 800 candidates will be sitting the examinations of the Institute of Quantity Surveyors during March 12 to March 16 next, inclusive, at centres in Birmingham, Bradford, Bristol, Carlisle, Liverpool, London, Plymouth, Southampton, Swansea, Glasgow, Belfast, Dublin, Australia, East Africa, South Africa, West Africa, Germany, Lebanon, Libya, and Malaya.

Dinner and Dance

Well over 160 guests met at Cobb's Restaurant, Sydenham, on the occasion of the second annual dinner and dance of the Building Department of the South-East London Technical College. The Board of Governors of the college, employers and employees, the staff, past and present students were well represented and the Principal of the college, Mr. H. A. Warren, was also present. The head of the department, Mr. M. C. Heath, presided, and after dinner proposed the Loyal Toast.

Cement and Concrete Courses

A course for builders is included in the prospectus for 1956 training courses in concrete work of the Cement and Concrete Association. There are a number of other courses listed on concrete, its mixing and uses of interest to engineers and supervisors. The courses generally last just under a week and are held at the training centre at Wex-

ham Place, near Slough, in Buckinghamshire. The centre is near the Association's Research Station at Wexham Springs where all practical work and demonstrations on the courses take place. A charge of £5 for the week courses has been introduced in addition to dues for accommodation and food. The prospectus of the courses can be obtained from the Cement and Concrete Association, 52, Grosvenor-gardens, London, SW1.

Approved Gas Appliances

The Gas Council has published List Number 4, December, 1955, of Tested and Approved Domestic Gas Appliances. The list is prepared at the request of the Ministry of Fuel and Power. It deals with the products of manufacturers of cooking appliances, refrigerators, space-heating appliances, water heaters, wash boilers and washing machines, and clothes airing and drying cabinets.

Ceiling Heights at Liverpool

The Ministry of Housing and Local Government has rejected a proposal by Liverpool Corporation that it should be allowed to introduce a by-law by which ceiling heights in the city should be at least 8 ft. for flats and maisonettes throughout, as well as for ground floor or living-rooms in houses, 7 ft. 9 in. for bedrooms in houses. The Ministry lays down a minimum of 7 ft. 6 in. for ceiling heights and a few weeks ago the Liverpool Corporation sent a deputation to see the Ministry in an effort to obtain a higher ceiling height.

The Ministry has stated that the circumstances in Liverpool were not such as to justify any deviation from the Ministry's model by-law laying down a minimum of 7 ft. 6 in.

Corporation TV Insurance

The cost of a comprehensive scheme for the insurance of television aerials on corporation houses in Hull in respect of the corporation's and third party risks is to be the subject of a report from the city treasurer Mr. C. H. Pollard. This was decided at a meeting of the Hull housing committee on November 14, when Cllr. R. E. Middleton recalled that there had been an earlier plan to take out such insurance at a cost to the tenants of one penny a week.

Keeping London Clean

London borough councils, acting through their standing joint committee, are to ask the Government to arrange for an investigation into the present systems of door-to-door refuse collection and the cleansing of streets, with the object of minimising the manpower now required for these services.

Higher Technology Courses

The London and Home Counties Regional Advisory Council for Higher Technological Education has prepared a bulletin of special courses in higher technology, to be held at London colleges in the coming spring and summer terms. There are many interesting courses listed, including a number with subjects allied to the building trade. The bulletin may be obtained, price 1s. 6d., from The Secretary, Regional Advisory Council, Tavistock House South, Tavistock-square, WC1.

OVERSEAS BUILDING

(From Our Own Correspondents)

AUSTRALIA.—The NSW Government are to spend several millions of pounds on new shipping berths, wharves, cargo handling facilities and blast furnaces at Port Kembla, one of Australia's great steel producing centres. Work is to start early next month on changing the historic Tom Thumb Lagoon into an inner harbour with 14 new berths. Dredging the lagoon and cutting a channel 250 feet wide by 32 feet deep will take about a year. The first 14 berths on the new port will be completed in four to five years.

INDIA.—The Madras State Government have put forward proposals for the setting up of a hydro-electric plant at Sileru. The first stage will comprise the installation of two 37,500 kw generating units. It is expected that work on the project will commence some time this year. . . . The Madras Government has also been considering proposals for the setting up of a paper factory in the Nilgiri Hills. It is proposed that the factory will be State run and will cost about £3m.

NIGERIA.—The Eastern Region Development Corporation of Nigeria is to invest £1½m. on a pioneer oil mill scheme, £200,000 on a fertiliser scheme, £112,000 on a coconut plantation scheme, £200,000 on the cashew nut industry, £500,000 in the Nigerian Cement Company, £400,000 in the Oban Rubber Estate, £325,000 in the Palm Estate at Calabar, and £225,000 each in the boatyard at Opobo and the Oil Palm Estate at Kwa Falls. Apart from these amounts considerable sums are to be spent on roads. A great deal of construction work is envisaged in connection with the aforementioned schemes. According to the Eastern Economic Planning Commission, a further £1½m. is to be spent in other developments yet to be agreed, but it is believed that priority will be given to ceramics, woodwork, papermaking and textiles. . . . Taylor Woodrow (West Africa), Ltd., has been awarded a contract for the design and construction of a new £1¼m. cotton mill at Kaduna. A tubular steel frame 650 ft. long and 225 ft. wide is to be incorporated in the design. . . . The Premier of the Eastern Region, Dr. Nnambi Azikiwe, has announced that American industrialists may start automobile and tyre production at some time in the future. Experts from the United Kingdom, USA and Germany are expected to undertake preliminary surveys in connection with footwear, steel and match industries. He also mentioned that a British television firm was interested in opening up in the Region. This involves much planning, and by the end of this year final details are expected for the building of factories to accommodate these industries. . . . The Eastern Nigeria Pharmaceutical Corporation has decided to build a salt factory capable of producing 75,000 tons annually, and a factory at Aba to manufacture hospital dressings, distilled water and other ancillary products. . . . A British company is to serve as managing agents for the proposed printing corporation which is to be established in the Eastern Region with an allocated capital of £200,000.

SINGAPORE.—The Singapore Government has published its master plan for the development of the Colony. The plan took three years to prepare and is two years overdue. It provides for the needs of an estimated population of 2,000,000 in Singapore, an increase of 800,000 by 1970. It aims to reduce the overcrowded city centre population from 340,000 to 290,000. Some 30,000 houses will be rebuilt. The most ambitious project is for three satellite towns in the rural areas, which will accommodate 200,000 people on 7,000 acres. The three towns will be self-contained, and new industrial estates for each town will be provided, totalling 800 acres in all.

SOUTHERN RHODESIA.—Work has begun on a new 4,000-acre urban settlement scheme near Umtali in Southern Rhodesia. Surveyors and town planners of the Native Department are now clearing the site in readiness for a new town for natives. The town will be called Zimunya and it will accommodate 20,000 people. It will also have hospitals, schools, churches, community centres, cinemas, hotels and shopping centres. This is the third native township started in Southern Rhodesia. . . . By a majority of seven votes in the Southern Rhodesian Parliament it has finally been decided that the capital shall remain in Salisbury. It is expected that construction will now commence on the several new buildings planned for whatever town was to become the capital.

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SWITZERLAND.—The Swiss aluminium industry is to participate in two companies which are to be set up to develop production of aluminium in French Guinea. One company is to build a hydro-electric plant which will provide power for the aluminium works which the other company will construct and which will have an annual production of 100,000 tons. In addition to Switzerland, France, Germany and Italy are to co-operate in this project. . . . The discovery of oil in Switzerland has led to speculation in building circles as a great deal of construction work is envisaged. For a start the Cantons of Zurich, St. Gallen, Thurgau, Aargau, Solothurn and Berne have concluded an inter-cantonal agreement to regulate the granting of oil concessions. An exploitation company is to be set up. It is, however, recognised that foreign expert assistance will be needed to develop the oil.

VENEZUELA.—Public works estimated at £100m. are planned for the Republic of Venezuela in the next 12 months. This was revealed recently in a speech by the President, General Marcos Perez Jimenez, which intimated that there were abundant opportunities for foreign concerns. The programme is wide in scope and much equipment and plant will have to be imported in order to carry it out. The major projects are as follows: £21½m. roads; £12½m. urban improvements; £11½m. housing; £9m. telegraph and telephone services; £6m. water and sewage works; £5¼m. transport materials; £5m. health and social welfare services; £4¼m. sugar mills; £4m. installations for armed forces; £4m. schools; £3½m. public buildings; £3m. ports and airports; £1½m. electrification; £1¼m. bridges; £1m. canalisation and dredging; the remainder of the £100m. is to be spent on improvements. The Venezuelan Government has been spending growing amounts of money on public works and capital equipment. According to the President great importance is to be attached to housing, public buildings, highways, waterworks and schools. In Caracas the most striking advance has been carried out in new blocks of flats which have risen on the site of former slums. Numerous street improvements and extensions to existing avenues and autobahns are also being made. Caracas is, however, not the only place in Venezuela which is being transformed by rapid development. The provinces can also show a lengthy and imposing list of completed works, including roads, schools, hospitals, hotels, housing schemes, power transmission lines and telephone systems. The British Embassy in Caracas is closely following building projects, and contractors in the UK who are interested in this market can obtain information from that Embassy.

Economic Report, India

* An agreement has been signed between the Government of India and Associated Electrical Industries for the establishment of a plant for the manufacture of heavy electrical equipment in India. AEI will act as technical consultants in the production of electric generators, transformers, switch-gear, turbines and traction equipment. A detailed project report is to be expected within 12 months. It is hoped that the factory will begin production in about five years and develop to full capacity within 10 to 12 years. This is an extract from Economic Report for November, 1955, for India. Telephone inquiries quoting CRE/2199/55 to Trafalgar 8855, ext. 2310.

* From the Board of Trade Special Register Information Service.

Priest Rapids Dam, USA

* The Public Utility District of Grant County has issued a formal call for tenders for the construction of the Priest Rapids Dam, powerplant and appurtenances on the Columbia River.

The dam will consist of 6,400 feet of earth embankment, 260 feet of concrete gravity section, 1,150 feet of deep-gated concrete spillway and 1,025 feet of powerhouse with integral intake or a total length of 8,835 feet. The dam is designed to develop a head of approximately 81 feet and the maximum height from deepest excavation to the roadway will be about 175 feet. The earth embankments, located at both ends of the dam will have impervious central cores with upstream and downstream shells of river sand and gravel. The central cores will extend through the previous river gravels to bedrock.

The spillway will be located in the right section, looking downstream, of the present river channel. It will be a concrete structure with ogee crest and bucket type energy dissipation. It will have 22 Tainter gates 40 feet wide by 50 feet high between concrete piers and will carry a bridge with 12-foot roadway.

The powerhouse, of the integral intake type, will be located in the left section of the river channel. It will be fully enclosed with space for 10 main generating units of which eight will be installed initially under this contract. Tentatively proposed fish handling facilities include a fish ladder adjacent to the right end of the spillway and a power-operated lift at the powerhouse side of the river.

Major quantities involved in the construction are as follows: Excavation—3m. cubic yards; Embankment—3½m. cubic yards; Concrete—840,000 cubic yards; Reinforcing Steel—46m. pounds.

Contract documents are available for loan from The Board of Trade, Export Services Branch, Lacon House, Theobalds-road, (Tel.: Chancery 4411, ext. 738 or 771) quoting reference ESB/25131/55. The closing date for bids is March 1.

Adaminaby Dam, Australia

* Tenders have now been called for and will be received up to March 26 for the construction of the embankments, intake structure, stilling basin and certain other works at Adaminaby Dam. The main embankment will be an earth and rock fill structure with a total volume of approximately 9½m. cubic yards. Telephone inquiries quoting ESB/28675/55 to Chancery 4411, ext. 738 or 771.

Pile Driving Plant

* The Director-General of Supplies and Disposals, New Delhi, India, requires one 35-ft. light type portable pile-driving plant with a 30-cwt. drop hammer. The machine is required to drive piles for road bridges. Closing date for tenders is January 27. A set of tender documents is available for inspection in Room 805, Export Services Branch, Lacon House, Theobalds-road, London, WC1. For further details telephone Chancery 4411, ext. 738 or 771, quoting reference ESB/27172/55.

Concrete Cube Press

* The Union of South Africa has called for tenders for one hydraulic press for testing six-inch concrete cubes. The closing date for bids is January 24. Telephone inquiries to Chancery 4411, ext. 738 or 771, quoting reference ESB/28529/55.

Ceramic Tiles, USA

* Mr. Squires, of the Selby-Battersby Co., 2405, W. Baltimore-street, Baltimore, is interested in getting in touch with UK manufacturers of ceramic tiles used primarily for hospitals, schools and office buildings.

The Selby-Battersby Co. are active principally in the contract installation of composition flooring for buildings and ships. The territory covered is principally the Eastern United States and the Gulf area, although some sales are made throughout the United States. Telephone inquiries quoting ESB/28124/55 to Chancery 4411, ext. 776.

Venezuela Sugar Factory

A complete Clyde-built sugar factory that will withstand earthquake shocks has been taken over at Turbio, Venezuela, after a successful trial period. Mirrlees Watson Company built it and shipped it overseas. The factory has a daily output of 2,500 tons of white sugar automatically packed in paper bags.

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B A T S F O R D

The SCOTTISH BUILDER

Aberdeen School Building

ABERDEEN has over the years since the war led other Scottish cities in school building. Out of a total of 64 schools in Aberdeen, 24 have been built in the last nine years and major construction has been carried out on another 14. Altogether in the period 1946-56 the expenditure incurred on educational facilities will exceed £5,300,000. The one big project still to be tackled is the junior technical college, an establishment urgently required and one which it is estimated will cost in the region of £750,000. A start would have been made by this time but for difficulty in securing a site.

Materials by Helicopter

AN OBAN FIRM of contractors, D. and J. Macdougall, are to use a helicopter for transporting materials to a building site. The firm recently secured contracts for the strengthening of the existing dams of the Tighnabruaich and Tarbert, Lochfyne, reservoirs. Building materials for the dam at Tighnabruaich reservoir have had to be transported up a rough hill track by a converted Bren-gun carrier and breakdowns have been frequent. The helicopter, it is estimated, will save more than three weeks on the work.

Daer Valley Water Scheme

THE £6m. Daer Valley Water Scheme, one of the largest projects of its type in Britain, designed to meet the needs of Lanarkshire over the next 30 years, is now approaching completion and should be finally operative this summer. The scheme was proposed in the post-war period to cover the needs of Motherwell and Wishaw. Hamilton, Airdrie and Coatbridge, and the new town of East Kilbride, as well as other Lanarkshire County Council commitments. A total daily supply of 27 million gallons will be available.

Post-war Scottish Housing

AT THE END OF 1955, 252,665 new permanent houses had been built since the end of the war. The back of the problem has been broken in many rural areas, but in the cities and industrial centres there is still a great shortage of homes. The main endeavours of new building programmes, it is expected, will be concentrated on clearing slums and the redevelopment of the centres of Scottish towns.

Aberdeen's Granite Satellite

A TOTAL of 2,430 houses are planned for Aberdeen's all-granite suburb town on the south side of the Dee. A total of 1,308 have been completed or contracted for. The housing committee, however, find that a granite house is more expensive to build than a brick one. The committee are now experimenting with the use of synthetic granite for the back and side walls of houses, which would reduce the difference in cost by about a half.

River Ness Bridge

INVERNESS TOWN COUNCIL hope to have all formalities completed so that a start can be made with the new road bridge over the river Ness, during the latter part of the year. The bridge should eliminate one of the worst traffic bottle-necks in the North of England.

It is expected that the design of the new bridge will be similar to the plan prepared before the war when the existing structure was condemned and an actual start made on its replacement.

Dunfermline Housing

1955 HAS BEEN a record-breaking year for Dunfermline. For the first time the number of houses completed and let by the Housing Department exceeded 400. The total figure was 426; 316 were built by the Corporation and 110 by Scottish Special Housing Association. The Town Council are hoping to build 400 new houses per year for the next three years. The waiting list is 3,681. During the three years the Council hope to close 450 condemned houses.

The Late J. M. Hogg

THE DEATH has occurred of John Mackintosh Hogg, senior partner in Crouch and Hogg, consulting civil engineers of Glasgow. Mr. Hogg was trained in the firm and became a partner in 1910 and senior partner in 1927. A member of the Institution of Civil Engineers since 1919 and a past-chairman of the Glasgow and West of Scotland branch, he was also a member of the Scottish section of the Institution of Water Engineers.

NEW BUILDINGS

Aberdeen.—Corporation approved plans for development of Palace Hotel site, Union-st. (est. cost £250,000). Site developers: Cohesion Ltd. of London.

Dumbartonshire.—Plans to be prepared for a new telephone exchange at the Drumroy Housing Development Site. A: S. Sim (FRIAS), Scottish MoW Dept., 137, George-st., Edinburgh.

Dundee.—Corporation has approved construction of multi-storey flats in CC architect's plan for redevelopment of city centre.

Edinburgh.—Plans to be prepared by their architects for a new training centre and nurses' home at the Western General Hospital, for the Edinburgh and Southern Regional Hospital Board, 21, Hill-st., Edinburgh.

Edinburgh.—The development of the open site in Lady Lawson-st. is to be reserved for commercial development. The Capital and Counties Property Co. and the Coal Board are submitting competing claims to build office blocks.

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SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from April 18, 1955. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 4s.; Labourers, 3s. 5½d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.*
		s. d.
1st	25	44 0
2nd	33½	58 8
3rd	50	88 0
4th	66½	117 4
5th	75	132 0

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	5½
Operatives on labouring operations (at end of probationary period)	3	2

Falkirk.—Plans to be prepared for new Stirlingshire Community Centre at the Thornton Housing Area. Council A: A. J. M. Gursell (F), Master of Works Offices, Westbank, Falkirk.

Glasgow.—Plans in hand and being considered by Corporation for health centre at Lethinghaugh-rd., Pollock. A: Crawford, Horn & Carson, 357, West George-st., Glasgow, WC2.

Glasgow.—Plans approved for new layout at Modans Protestant prim. sch. A: John Macnab (F), Education Planning and Architectural Offices, Bath-st., Glasgow, WC2.

Glasgow.—Plans by their architects and engineers have been approved for extensions to the works of Messrs. Chance Bros., Ltd., Maryhill.

Glasgow.—Plans for Messrs. R. S. MacColl & Co., Ltd., approved for additions and alterations at 142, North Woodside-rd., Cowcaddens. A: Honeyman, Jack & Robertson (F/A), 195, Bath-st., Glasgow, WC2.

Glasgow.—Plans approved for Messrs. Gowan & Co., Ltd., for additions and alterations at 43, Selway-st. A: James Thomson King & Ptnrs. (A/A), 5, Somerset-pl., Glasgow, WC3.

Glasgow.—Plans in the hands of the architects of The Dawsholm Paper Manufacturing Co., Ltd., Glasgow, NW2, for additions and alterations to their factory at Dawsholm-rd., Maryhill.

Glasgow.—Plans for the Riverside Milling Co., Ltd., approved for new additions at Shearer-st. Eng. and A: Blyth & Blyth, 135, George-st., Westend, Edinburgh.

Glasgow.—Plans prepared by the engineers of Messrs. C. S. Logan & Co., Ltd., Pollockshaws-rd., Glasgow, SC5, have been approved for new showrooms, filling station and 120 lock-up garages at Salterland-rd.

Glasgow.—Plans approved for new hall at Milncroft-rd. A: John B. Monteith (F), Portree Villa, Portpatrick, Wigtonshire.

Glasgow.—Plans to be prepared for police station for South Glasgow at Oxford-st. A: James Macmillan Riddet, Planning and Architectural Dept., George-sq., Glasgow, C1.

Glasgow.—Plans to be prepared for old people's home at Tunberry-rd., Hyndland. A: Archibald G. Jury (F), Housing Architectural and Planning Dept., The Trongate, Glasgow, EC1.

Glasgow.—Plans approved for Maurice W. Digby for alterations and additions at London Calton. A: John B. Wingate (F), 25, Wellington-st., Glasgow, WC2.

Glasgow.—Plans in the hands of the architects of The Scottish Construction Co., Ltd., Sighthill Industrial Estate, Edinburgh, for 200 to 230 houses at the Castlemilk housing development site.

Glasgow.—Detailed planning has begun on two buildings for education department. One is to be a college for printing and building, and the other for commercial subjects. Both buildings are to be erected in Cathedral-st. and North Hanover-st.

Greenock.—Plans for approved scheme of 20 houses at the Balclutha and the Dungournie sites are to be prepared. A: Robert L. Rankine (F), Master of Works Offices, Municipal-bldgs., Wallace-sq., Greenock.

Kirkcaldy.—Dean of Guild Court has approved plans for blocks of flats to house 37 families on three sites at the Links-st. redevelopment area.

Roxburghshire.—Plans approved for additions to The Kings Hotel, Hawick. A: F. Player, 20, Bridge-st., Hawick.

Stirlingshire.—Plans approved for the Grangemouth Petrol Refining Co., Ltd., for extensions and additions at the Grangemouth Refining Power Station. A: Farmer & Dark (F), Romney House, Marsham-st., SW1.

The Builder FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JANUARY 16.

†**Hendon BC.**—Block of 8 three-storey flats with 1 shop, 4 garages at rear, etc., at Layfield-rd., NW4. Boro' E&S. Dep. £2 2s. Tenders by February 10.

JANUARY 19.

*†**Surrey CC.**—Extensions, Morden Farm County Sec. Mixed Sch. County A, Kingston-on-Thames.

*†**Surrey CC.**—New sec. sch., Cranleigh. County A, Kingston-on-Thames.

*†**Worcs CC.**—Ambulance station and 10 houses at Red Hill, Stourbridge. L. C. Lomas, FRIBA, 14, Castle-st., Worcester. Dep. £5 5s.

JANUARY 20.

Formby UDC.—20 pairs three-bedroomed and 4 blocks of 4 three-bedroomed traditional houses at Royal Hotel site. E&S. Dep. £2 2s.

JANUARY 21.

*†**Cornwall CC.**—Erection of (a) County Sec. Sch. at Looe; (b) infants' sch. at Liskeard. Deputy County A, County Hall, Truro. Dep. £5 5s. Tenders by February 27.

*†**Droitwich BC.**—31 houses and 10 flatted dwellings at Chawson housing estate. BE&S. Town Hall. Dep. £2 2s.

*†**Essex CC.**—New teaching block at Chingford County High Sch. County A.

*†**Essex CC.**—Gymnasium extension at South Woodford Sec. Sch. for Boys. County A.

*†**Worcs CC.**—Three-classroom extension at Reddich Bridley Moor cty. sec. sch. Richard Sheppard & Partrs., 5, Southampton-pl., London, WC1. Dep. £2 2s.

*†**Worcs CC.**—Two-form entry prim. sch. at Howley Grange-rd., Halesowen. Richard Sheppard & Partrs., 5, Southampton-pl., London, WC1. Dep. £2 2s.

*†**Worcs CC.**—Day special sch., Feldon-la., Halesowen. Nichol, Nichol & Thomas, architects, White House, 111, New-st., Birmingham, 2. Dep. £2 2s.

JANUARY 23.

Brownhills UDC.—28 houses and 17 bungalows at Lindon-rd./Friezland-la. site. Council's A: Jennings, Homer & Lynch (L), 3/5, Church-st., Brierley Hill, Staffs.

*†**Hants CC.**—Fire station, Petersfield. County A, Winchester. Dep. £1 1s.

JANUARY 24.

Ilford BC.—Modernisation of 103 houses at Fencepiece estate. BE, Town Hall. Dep. £2 2s.

*†**Leeds Regional Hospital Board.**—Extensions and alterations, Stansfield View Hospital, Todmorden. Architect to Board, Park-parade, Harrogate. Dep. £2 2s. Tenders by Feb. 15.

JANUARY 25.

*†**Hants CC.**—New sec. sch. at Tadley, nr. Basingstoke. County A, The Castle, Winchester.

*†**Hants CC.**—Extensions at Aldershot County High Sch. for Girls; enlargement and adaptations at Odiham Robert Mav's Sch.; minor improvements and alterations at Headley The Home Controlled Sch. County A, The Castle, Winchester.

*†**Norfolk EC.**—(a) Clinic at Acle; (b) kitchen and dining room at King's Lynn Girls' High Sch.; (c) two classrooms at Melton Constable Cty. Prim. Sch.; (d) new classrooms at Swanton Morley. Chief Ed. Officer, Stracey-rd., Norwich.

*†**Stevenage Development Corpn.** — Applications invited to tender for houses (mainly in contracts of 300) blocks of flats, shops and maisonettes and factories. Chief A, Aston House, near Stevenage, Herts.

JANUARY 26.

Glasgow Corp.—Two double and four single shops and eight flats at Stravanan-ave., Area U4. Architectural and Planning Dept., 20, Trongate, Glasgow, C.1.

*†**Hants CC.**—Two classrooms, boiler house and formation of kitchen, etc., at Ecchinswell and Sydmonton C. of E. Sch., nr. Newbury. County A, The Castle, Winchester.

Malvern UDC.—Alterations of existing buildings at Pickersleigh-rd. depot. S & Water E, Council House. Dep. £1 1s.

JANUARY 27.

*†**Swindon BC.**—Estate common room, Penhill neighbourhood. Boro' A.

JANUARY 30.

Wareham and Purbeck RDC.—Erection of depot at West-st., Wareham, comprising garage in brickwork with precast prestressed concrete slab roof and store in brickwork with tiled roof, together with drainage, paving and other incidental works. E&S, Westport House, Wareham. Dep. £3 3s.

FEBRUARY 4.

Gillingham BC.—43 dwellings, Brompton. BE. Dep. £5 5s.

FEBRUARY 6.

Andover TC.—Removal of War Memorial and re-erection. BS.

Thurrock UDC.—(a) New depot building, Connaught-ave., Grays; (b) new bowls pavilion, Daisy Field, Tilbury; (c) new memorial gateway, Daisy Field, Tilbury. E&S, Council Offices, Palmer's-ave., Grays. Dep. £2 2s. for (a).

West Riding CC.—House and garage at Bingley Training College. County A, Bishopgarth, Westfield-rd., Wakefield. Dep. £1 1s.

FEBRUARY 10.

Reading CB.—50 houses at Severn-way, Meadway and Neath-gdns., and 16 houses and garages at Usk-rd., St. Michael's estate. Boro' A, Town Hall. Dep. £2 2s.

FEBRUARY 13.

Cardiganshire CC. — Extensions, Cardigan Grammar Sch. County A, Aberystwyth.

Southend-on-Sea CB.—Lavatory accommodation at West Leigh Prim. Sch. Boro' A, 30, Alexandra-st. Dep. £2.

FEBRUARY 17.

East Barnet UDC.—Nine shops and eight maisonettes at Mount Pleasant Roundabout. E&S, Town Hall, New Barnet. Dep. £2 2s.

East Barnet UDC.—Six flats at Fordham-rd. E&S, Town Hall, New Barnet. Dep. £2 2s.

NO DATE.

Rothwell UDC.—50 three-bedroomed houses at Wood-la. estate. A: R. A. Easdale & Son (L), County-chbrs., Bradley-st., Castleford, Yorks. Dep. £2 2s.

PAINTING, MATERIALS, ETC.

JANUARY 19.

City of Birmingham Water Dept.—Supply of 1,495 yds. 36-in. nominal dia. steel pipes to be electrically welded and lined centrifugally with concrete by the manufacturers. Gen. Manager & Secretary, Water Dept., Council House.

JANUARY 21.

Canterbury City C.—Annual tenders for road-making and other materials. City E&S.

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JANUARY 23.

*†**Beds EC.**—Electric lighting and heating to 2 new cty. sec. schs., Eaton Socon and Barton. County A, Bedford.

Dorset CC.—Annual tenders for road-making materials and services. County S.

Esher UDC.—Annual tenders for road-making and other materials and services. E&S.

Gillingham BC.—Annual tenders for road-making and other materials and services. Boro' E.

Wallasey.—Annual tenders for supply of road-making and other materials. Boro' E&S.

JANUARY 24.

Portsmouth City C.—Annual tenders for road-making and building materials. Contracts and Supplies Section, City Treasurer's Dept., 48-51, Clarence-parade, Southsea.

JANUARY 25.

Dunstable BC.—Annual tenders for road-making and other materials. Boro' E&S.

Hackney MBC.—Annual tenders for road-making and other materials and services. Boro' E&S.

Manchester City C.—Annual tenders for supply of bricks and Buxton lime. Director of Housing, Town Hall.

JANUARY 26.

Staffordshire CC.—Annual tenders for road-making and other materials and services. County S.

JANUARY 27.

Middlesex CC.—Annual tenders for road materials and works. County E&S, 10, Gt. George-st., SW1.

JANUARY 28.

Halifax CBC.—Annual tenders for supply of road-making and other materials. Boro' E, Crossley-st.

Hornchurch UDC.—Annual tenders for supply of road-making and other materials and services. E&S.

Swansea CBC.—Annual tenders for building, road-making and other materials and haulage. Boro' E&S.

JANUARY 30.

Bradford City C.—Annual tenders for road-making and other materials. City E&S.

East Ham CBC.—Annual tenders for road-making and other materials and services. TC.

Manchester City C.—Cleaning and painting of up to 6,000 street lighting standards, brackets, lanterns, switch pillar boxes, etc. City S.

Newcastle-under-Lyme BC.—Annual tenders for road-making and other materials. Boro' S.

West Suffolk CC.—Annual tenders for road-making and other materials. Applications for inclusion in lists for (a) laying precast kerb and channel; (b) provision and erection of fencing; and (c) bridge foundation works. County S, Manor House, Bury St. Edmunds.

JANUARY 31.

Breconshire CC.—Annual tenders for road-making materials. County S.

Carmarthenshire CC.—Annual tenders for road-making and other materials and services. County E&S.

Huddersfield CBC.—Annual tenders for road-making and other materials. Boro' E&S, High-st.-bldgs.

Pembrokeshire CC.—Annual tenders for road-making and other materials and services. County S.

Radnorshire CC.—Annual tenders for road-making materials and services. County S, Llandrindod Wells.

FEBRUARY 1.

Bermondsey MBC.—Annual tenders for road-making and other materials and new applications for inclusion in the panel of contractors for non-period contracts. Purchasing Officer, Municipal Offices, Spa-rd., SE16.

Bournemouth CBC.—Annual tenders for road-making and other materials and services. Boro' E.

FEBRUARY 4.

Epping UDC.—Annual tenders for road-making and other materials. S, 91, High-st.

Oxford CC.—Annual tenders for surface dressing of county roads. County S, 8, New-rd.

FEBRUARY 8.

Andover TC.—Hot water installations for 27 pre-war houses. BS.

Cambridge City C.—External painting of 986 houses and flats at various sites. City E&S, The Guildhall.

FEBRUARY 9.

Manchester City C.—600 tons spun-iron and c.i. pipes and specials required for Davyhulme sewage works extensions. City S.

FEBRUARY 18.

Somerset CC.—Annual tenders for road-making and other materials and services. County S, Taunton.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

JANUARY 18.

Rowley Regis BC.—740 lin. yds. 9-in. dia. foul sewers and 714 lin. yds. 9-in. to 18-in. dia. storm sewers with manholes, etc. Boro' E&S. Dep. £2 2s.

JANUARY 23.

Nuneaton BC.—Construction of Donnithorne-ave. canal bridge, with r.c. abutments and prestressed concrete decking, 60 ft. span by 34 ft. wide and approach works consisting of 300 lin. yds. 22 ft. wide carriageway of pitched foundation and bituminous macadam surfacing, with kerbing and paving. Boro' S. Dep. £2 2s.

Sevenoaks RDC.—Construction of hardcore and tarmacadam lay-bys, concrete road, tarmacadam and

asphalt footpaths and ancillary works for site for 28 dwellings at Mount Pleasant, Sevenoaks Weald. E&S. Dep. £2 2s.

JANUARY 25.

†**Metropolitan Water Board.**—Completion of Walton South Reservoir, nr. Walton-on-Thames, capacity 4,300 million gals., depth 57 ft., area 374 acres. Principal works involved are 1½ miles cut-off trench, earth embankment containing 3 million cu. yds. with a central puddle core wall, inlet and outlet works and two trenches each ½ mile long. Chief Engr., Rosebery-ave., EC1. Tenders in the Spring.

JANUARY 26.

Lunesdale RDC.—1,000 yds. 12-in. dia. sewer, 2,650 yds. 6-in. dia. sewer, 40 yds. 9-in. dia. sewer, manholes, etc., in Caton and Brookhouse parish, and construction of sewage disposal works. D. H. Moore, B.Sc., M.Inst.C.E., constg. engr., 12, Valley Bridge-parade, Scarborough. Dep. £5 5s.

JANUARY 30.

Uttoxeter UDC.—Laying only of 3,300 yds. 10-in. dia. spun-iron trunk water main from Prestwood reservoir to Rochester. E&S. Dep. £2 2s.

JANUARY 31.

Cricklade and Wootton Bassett RDC.—2,000 yds. 4-in. dia. asbestos-cement and 290 yds. 1½-in. dia. copper water mains and incidental work arising from abandonment of existing corroded mains between Down Farm and Newths-la., Hayes Knoll, Purton. E&S, Council Offices, Wootton Bassett. Dep. £2 2s.

Southgate BC.—Hard-surface play area at Barrowell Green recreation ground, N21, including clearing and grading site and supplying and laying 18,000 super. yds. cold asphalt surfacing with necessary drainage works, brick retaining wall, fencing, etc. Boro' E&S, Town Hall, N13.

FEBRUARY 4.

Bridlington BC.—Re-equipment of Burton Agnes pumping station with four sets of 25,000 gals. per hour horizontal electrically powered centrifugal pumping plant and ancillary equipment. Water Engineer, Marton-rd., Bridlington. Dep. £2 2s.

FEBRUARY 6.

***Cuckfield UDC.**—Road works at Sheppeys, Haywards Heath. S, Council Offices, Oaklands, Haywards Heath. Dep. £2 2s.

FEBRUARY 9.

Oxford City C.—Laying of 4,500 lin. yds. 30-in. dia. steel water main from Swinford to Wytham Mill, recommissioning of existing 24-in. dia. water main and ancillary works. City Water E, 65, St. Aldate's.

FEBRUARY 10.

Middlesex CC.—Construction of dual carriageways, surface water drains, etc., on about one mile London-Fishguard trunk road (A.40) between Victoria-rd. and Park Royal station, Western-ave. County E, 10, Gt. George-st., SW1.

FEBRUARY 13.

Congleton RDC.—2¼ miles 6-in. dia. stoneware sewers, ¼-mile 4-in. asbestos-cement rising mains, two concrete and brick pumping stations and sewage disposal works in Goosetrey parish. Binnie, Deacon and Gourley, engrs., Artillery-row, SW1. Dep. £10.

FEBRUARY 15.

Redcar BC.—Reconstruction of trunk sewer and sea outfall, comprising 1 mile 84-in. dia. trunk sewer in open cut and tunnel, lengths of pipe sewers of 54 in. dia. and below, 750 yds. 36-in. dia. sea outfall to below low-water mark and 48-in. dia. c.i. overflow pipes and other appurtenant works. John Taylor & Sons, constg. engrs., Artillery-row, SW1. Dep. £10. Drawings also with Boro' E.

NO DATE.

Border RDC.—1,580 yds. 6-in. and 7-in. dia. sewers in stoneware and c.i., with manholes, etc., and construction of sewage disposal works at Houghton. Council's E, 7, Victoria-pl., Carlisle.

Border RDC.—11,400 lin. yds. 8-in. and 7-in. dia. pipes in spun cast-iron and steel, 2,000 lin. yds. asbestos-cement pipes with valves, fittings, etc., and erection of small chemical house. Council's E. Dep £2 2s.

GENERAL BUILDING WORK

(LONDON)

Bermondsey.—CHURCH.—Proposals have been made for the erection of a Methodist church on a site at the Bermondsey Settlement at an estimated cost of £70,000.

Camberwell.—SCHOOL ADDITIONS.—Proposals have been made by LCC for the erection of a dining-room and kitchen, estimated cost £23,995, at Bagshott-st., to serve Walworth secondary school.

City.—OFFICES.—Plans have been prepared by Theodor Birks, FRIBA, 2, Ludgate-hill, EC4, for the erection of a 16-storey office building at Ludgate Circus, EC4, at an estimated cost of £1¼ million.

Enfield.—LAND SALE.—Middx. CC has approved sale of about a half-acre of land adjoining 36, Haltwhites-hill, to BC for housing purposes.

Hackney. — HOUSING DEVELOPMENT. — BC has approved proposals for the development of the Paragon-rd. site by the construction of 282 dwellings at an estimated cost of £835,000. The architects are Messrs. Joseph of 10, Lowndes-sq., SW1.

Hackney.—SITE ACQUISITION.—BC is to purchase for £8,000 land at Graham-rd. and Walton-way from British Transport Commission for use as a site for a proposed central works depot.

Heston.—SCHOOL.—Plans have been prepared by Middlesex County Architect's Dept. for the erection of a grammar school on a site adjoining the Great West Road. The estimated cost of the scheme is about £250,000.

Ilford.—HOSTEL.—CC propose the erection of the Ilford Mark Gate Hostel to be included in the 1956-57 building programme. The estimated cost of the scheme is £54,300. Essex CC Planning Dept. are the designers.

Islington.—OUT-PATIENTS' BLOCK.—The Regional Hospital Board has approved proposals for the erection of a new out-patient block at the Royal Northern Hospital at an estimated cost of approximately £250,000. The Management Com. and the consultant medical staff are to co-operate with the board in the planning of the new block. The plans are in preparation by Tooley and Foster, Buckhurst Hill, Essex.

Kensington.—FLATS AND MAISONETTES.—LCC has approved proposals by BC for the erection of 12 flats at Nos. 61 and 63, St. Ervans-rd., 8 maisonettes and 6 flats at Oxford-gdns., and 24 maisonettes and 6 flats at Westbourne Park-rd. area.

Romford.—HOUSING.—A group of 12 police houses is to be built by Essex CC at Harold Wood Hall at an estimated cost of £25,608.

Stoke Newington.—FLATS.—Proposals have been made by BC for the erection of 35 flats on a site in Manor-rd./Lordship-rd., at an estimated cost of £76,365. Plans prepared by BC's own architects.

Willesden.—SCHOOL.—Middx. CC propose the erection of a new junior school in the grounds of Malorees school at estimated cost of £61,292.

Woolwich.—FLATS.—Proposals have been made for the erection of 2 blocks providing 47 flats on a site at the junction of William Barefoot-dr. and Great Harry-dr. on the Coldharbour estate, Mottingham, at an estimated cost of £62,000. The architects are the BC Architectural and Planning Dept.

(PROVINCIAL)

Aldridge.—Staffs CC proposes erection of new branch library at Pheasey.

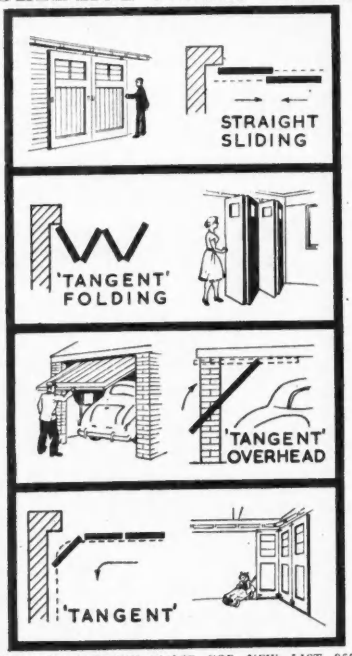
Anglesey.—CC proposes erection of new fire station at Rhosneigr in 1956/57 programme; approved expenditure £10,393 for erection of clinic at Llangefni; to prepare working drawings for fire station at Llangefni, £14,414 est.—Conversion of "Garreglwyd" as home for aged, proposed £14,250 est.

Barnard Castle.—UDC has decided to build 12 more houses at Flatts estate. S.

Barrow-in-Furness.—EC proposes extensions and alterations at county gram. sch. for girls, £26,640 est.

Henderson

SLIDING DOOR GEAR



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Bebington.—BC approved scheme for erection by private builder of 94 houses and 10 bungalows at Mark Rake, Bromborough.

Belfast.—64 acres at Glengormley have been acquired by Charles Hutchinson, builder, Ardmore House, Finaghy, for erection of 700 houses of various types. Mr. Hutchinson has also bought land between Andersontown and Suffolk, Dunmurry, for a scheme of 300 houses. Total, £2 million est.

Billingham-on-Tees.—UDC obtaining tenders for 100 houses. Plans by J. H. Shepherd, S, Council Offices, Haverton Hill-on-Tees.

Birmingham.—Plans in hand for construction of new research block at Bordesley Hall, Alvechurch, for British Cast Iron Research Assn. £50,000 est.

Bishop Auckland.—New drill hall for 6th Batt. Durham Light Infantry is to be built and work, to take 16 months, expected to start soon. A: Albert H. Fennell & Co. (L), Bridge End-chbrs., Chester-le-Street.

Blaydon (Durham).—The UDC approved proposal to build 120 houses a year to clear slum areas.

Blyth.—Boro' E prepared revised scheme for erection of flats and maisonettes at Delaval-ter. near town centre.

Boldon.—UDC approved plans for proposed private housing estate at Langholm-rd. and Beckenham-ave. for William Leech (Bldrs.), Ltd., St. James's-st., Newcastle-on-Tyne.

Bradford.—Corpn. has granted 99-year lease of site bounded by Market-st., Bridge-st., Leeds-rd., and Leeds Arcade to Graham Family Settled Estates, Ltd., who propose to erect six-storey building comprising shops and offices. A: Clyde Young & Bernard Engle (F), 8, New-sq., WC2.

Bradford.—EC received approval for the erection of a new technical institute on the site of Rose Mount, Manningham. £339,000 est.

Bridgnorth.—RDC to prepare plans for 4 aged persons' bungalows at Hallon Worfield and 8 houses at Neenton.

Brierfield.—UDC approved plans for conversion of Burnley-rd. Methodist Church into drysalter's warehouse and premises for Hankeys, Ltd., Greyhound Yard.

Brierley Hill.—TC proposes erection of new public baths and is to place orders shortly for the reinforced concrete and steel required.—To negotiate tender with present contractor for third phase, comprising Town Hall, of Civic Centre scheme.—Proposes erection of branch library at the junction of Commonside and Bradley-st., Pensnett.—To invite tenders for 466 dwellings in 1956 programme.

Brighouse.—BC approved plans: extensions to works at Brookfoot Mills for Tufted Carpets, Ltd.; new loading bay and alterations for offices at Brow Mills, Hipperholme, for F. Peel.

Brighouse.—By-law and TP approval to F. P. Leach & Sons, Ltd., for 14 houses at Mayfield estate, Baliffe Bridge.

Brighton.—TC approved erection of 28 flats in three blocks at Lower Bevendean estate. £58,100 est. Plans by Boro' E&S.—Reconstruction of Bevendean Farm in several contracts, total est. £10,500. Boro' E&S.

Bristol.—City C approved HC recommendation to build maintenance depot and agent's office at Hartcliffe estate. £18,848 est.

Buckingham.—County Planning Com. approved provisionally proposal of Wipac Corpn., Ltd., to build factory for light industry at London-rd.

Burnley.—BC approved revised layout for 10 aged persons' bungalows at Belvedere-rd., £15,117 est.

Bury.—TC to give priority to erection of new primary school at Sunny Bank estate; approved scheme for central bus station at The Mosses, £79,000 est.

Canterbury.—New Simon Langton sch. to be included in 1956/7 programme. City A.

Carlisle.—New warehouse and administrative office to be built at Caldewgate Biscuit Works of Carr & Co., Ltd. A: Huckle & Durkin, 30, Queen Anne-st., London, W1.

Carlisle.—Tyres Services (Carlisle), Ltd., Metcalfe-st., propose tyre service depot at Durranhill industrial estate.

Carlisle.—TC proposes adaptation of outbuildings at College of Art and erection of 300 to 350 dwellings at Section 2 of Moreton estate.—EC proposes new science laboratories at Carlisle high sch. for girls, £26,540 est.—TC proposes extensions to Barn Close Home for Old People, £35,000 est.

Castle Ward.—Tenders being obtained for works depot at Ponteland for RDC. Plans by S.

Caterham.—TP Com. approved outline plan for 16 one-bedroom two-storey flats at Westway, proposed by Housing Com., 22 houses at Cromwell-rd., and six bungalows at junction Bond-rd./Limpsfield-rd., Warlingham.

Camborne.—Demolition of the old Commercial Hotel and building of a bank and seven shops with offices above is planned by Charterhouse Holdings, Ltd.

Chester-le-Street.—RDC proposes to build houses at Nettlesworth for aged people.

Denby Dale.—UDC approved plans for commercial TV station at Emley Moor for Independent Television Authority.

Durham.—Newcastle Hospital Board to proceed with additions covering 4,000 sq. ft. to Dryburn Hospital, and tenders being obtained. Board's Chief A.

Durham.—CC to build new modern school at Middleton-St.-George. County A.

Durham.—NCB Architects' Dept., Ashfield Towers, Gosforth, Newcastle-on-Tyne, has plans in hand for

pithead baths at Deaf Hill, Tanfield Lea, Towneley and Pelton Fell collieries.

Felling.—Durham CC to build primary school at Leam-la. (Lingey House). County A.

Gateshead.—Hospital Management Com. are planning to convert children's hospital into regional cancer hospital for women and to enlarge children's ward at Queen Elizabeth Hospital. Plans by Newcastle Regional Hospital Board. Osborne-rd., Newcastle.

Gillingham (Kent).—EC recommends inclusion of following in 1956/7 programme:—Prim. sch. at Hillyfields; RC sec. sch. nr. Rainham Mark; second instalment Great Lines sec. sch., and gymnasium and changing-rooms at Woodlands sec. sch.

Gosforth.—Plans prepared for 32 flats between South-st. and Chapel-st. and 116 flats between Chapel-st. and Elizabeth-st., for UDC. S.

Grimsby.—TC approved new projects at various development sites:—2,148 sq. yds. at King Edward-st. for Humber Warehousing Co., Ltd., Lincoln (in principle); 1,200 sq. yds. at Orwell-st. for Mac Fisheries, Ltd.; 760 sq. yds. at Cleethorpe-rd., nr. Lock Hill, for Bedford & Gifford, Ltd.,—Reconstruction Com. approved plans for new block of offices at Lock Hill for National Union of Seamen and agreed to conversion of ice rink in Ladysmith-rd. into food factory for Berkeley Hygienic Products, Ltd.

Hartlepool.—TC to spend £44,000 on sea defence works, part (£24,000 est) by direct labour. Scheme under consideration by TC for building of community centre in Miers-ave., £11,000 est.

Hazel Grove and Bramhall.—UDC approved plans for supersonic wind tunnel at south west corner of Woodford Airfield and additional storey to office block at Woodford Assembly, Chester-rd. for A. V. Roe & Co., Ltd.

Hebburn-on-Tyne.—UDC approved plans for Methodist Church in Argyle-st. and infants' school in Toner-ave. for Durham CC.—Newcastle Breweries, Ltd., Haymarket, Newcastle-on-Tyne, to erect licensed premises in Victoria-rd. East.

Hinckley.—Housing and TP Com. recommend erection of 102 houses and flats on various sites in 1956.

Houghton-le-Spring.—Durham CC to erect infants' school at Gillas-la., Houghton-le-Spring, and modern school at Chester-rd., Penshaw. County A.—During present year, UDC intends building 88 houses, two shops and flats at Hindson-cres. North, 81 houses at Burnside estate, and six houses at Morris--ter. Council has own direct labour organisation.

Huddersfield.—Brook Motors, Ltd., propose erection of new factory at Hope Bank, Honley.

Jarrow.—Turley & Williamson (A), Jesmond-rd., Newcastle-on-Tyne, have prepared plans for factory and laboratory at Bede trading estate.

Kidsgrove.—UDC proposes erection of 50 houses during 1956/57 programme.

Lancs.—CC to prepare detailed plans for adaptation of Apprentices' Hostel, Kirkby, £23,000 est.—EC approved inclusion of Kirkby Westvale No. 2 Junior and Infants' School in current building programme, £95,197 est., Middleton Hollin sec. sch., £138,561 est., and additional classrooms at Farnworth Highfield county sch., £10,054 est.

Leamington Spa.—BC approved layout for 90 dwellings at Lillington estate.—Ansells Brewery Co., Ltd. propose erection of licensed premises at Crown Way, Lillington. Plans by Staff A.

Macclesfield.—TC seeks approval for erection of new crematorium in 1956 programme.

Malvern.—HC recommends building of 100 houses in 1956/7 programme, 50 houses in 1957/8 and 10 additional houses per annum for slum clearance.

Mansfield.—TC approved layout by Boro' S for 58 houses and 6 garages on site 5G at Ladybrook estate. —Boro' S also prepared plans for shops and flats at main shopping centre on this estate.

Mansfield.—BC approved plans: offices at Bury Hill-la. for Coal Industry Welfare Organisation; new workshop at Manvers-st. for Mansfield Sutton and District Co-operative Society, Ltd., and shops and offices at Regent-st. for Ashmead Properties (Mansfield), Ltd.

Matlock.—Butterley Co., Ltd., proposes erection of 50 houses at The Wolds, off Cavendish-rd.

Middlesbrough.—Work expected to begin in April on £30,000 scheme for construction of new outpatients' department at North Riding Infirmary, Middlesbrough, for Newcastle Regional Hospital Board. Board's Chief A.

Morecambe.—Trustees of Torrisholme Methodist Church propose erection of new church premises at Longton-dr.

Newcastle-on-Tyne.—Plans approved for chemical factory at Fawdon for Scott & Turner, Ltd., Gallowgate, Newcastle. A: Cackett, Burns Dick & McKellar (F), 21, Ellison-pl., Newcastle.—Plans approved for warehouse and offices in Blandford-st. for J. Gould. A: Harrison & Short, 11, Clayton-st., Newcastle.—Plans approved for three-storey flats and maisonettes in St. Peters-rd. for HC. City A.—New science rooms at Elswick-rd. sec. sch. and changing-rooms, etc., at Ponteland-rd. A: S. N. Slipper (L.), City Education Offices, Northumberland-rd., Newcastle.

Newcastle-on-Tyne.—City C received loan sanctions from MH&LG for £31,402 for 18 police houses on various sites at Walker; £24,629 for 15 houses at small vacant sites; £80,668 for 48 flats and maisonettes at Kenton North; £157,029 for 106 houses at Kenton North; and £113,921 for 75 houses at Kenton North. City A.

Northampton.—P. Phipps & Co., Ltd., propose erection of office block at Bridge-st. Brewery.

Nottingham.—TC to purchase 5-acre site between Rock-st. and Ravensworth-rd., Bulwell, for housing purposes. Approved estimate of £100,678 for proposed Glapton junior and infants' schools.

Nottingham.—TC seeks loan of £41,866 for new school for ESN girls at Perry-rd.

Notts.—National Coal Board proposes erection of new buildings at Bestwood Colliery; £500,000 est. Plans by Divisional A. H. S. Barnett (L), 68, Lower Parliament-st., Nottingham.

Oldbury.—TC approved plans for new woodworking machine shop at Astra Works, Dudley-rd., for Walford Engineering (Oldbury), Ltd.

Rawtenstall.—TC approved new factory at Newhallhey for Mullard (Blackburn) Works, Ltd., Blackburn.

Redditch.—MoW proposes erection of new automatic telephone exchange at Abbey Hostel site, Birmingham-rd., £50,000 est. Plans by MoW Architects' Dept.

Rugby.—RDC to invite tenders for erection of dwellings at Stretton-on-Dunsmore, Withybrook, Wolvey, Anstey and Burton Hastings.

Rugby.—RDC approved plans for office block and pump house at Ansty Aerodrome for Armstrong Siddeley Motors, Ltd.

Saddleworth.—UDC proposes erection of 12 semi-detached houses at Carr-la., Greenfield. A: P. Howard, 88, Mosley-st., Manchester.

Scarborough.—TC approved plans for new stand at Cricket Ground, £15,000 est. A: T. H. Johnson & Son (F), Doncaster.

Seisden.—RDC proposes erection of 206 dwellings and 300 overspill houses in 1956 programme.

Shrewsbury.—TC to proceed with scheme for erection of crematorium at London-rd. area. £40,000 est.

South Shields.—TC has received approval to building of block of offices at Market-pl. £20,000 est.

South Shields.—HC recommends building of 16 one-bedroom flats in two blocks at Wenlock-rd. site. £18,400 est. Boro' E.

Staveley.—UDC proposes erection of 80 houses at Inkersall Green and 100 at Middlecroft area in 1956 programme.

Stockton-on-Tees.—TC to acquire for housing purposes 40 acres of land at Tithe Barn Farm. Boro' A.

Stourbridge.—Boro' S prepared detailed scheme for conversion of one of the chapels at Stourbridge Cemetery as crematorium.

Stretford.—TC approved following proposals of HC:—18 two-bedroomed flats at Stretford-rd., 261 dwellings at Irlam-rd., Urmston, 16 maisonettes at 838, Chester-rd., and 52 dwellings at Selby-close.

Sunderland.—RDC received sanction to build 8 houses at Castletown. Cost £10,222. S.

Sunderland.—MoH&LG consent to borrowing of £44,300 for erection of dwarf walls fronting 1,772 houses at various estates; £71,348 for extensions to Sunderland College of Art; and £357,491 for 292 houses at Farringdon estate.

Sunderland.—By-law approval to Edwin M. Lawson (A), for James Deuchar, Ltd., for rebuilding of Empress Hotel.—By-law and TP permission to Geo. Clark & N.E.M. (Sunderland), Ltd., for fitting and erecting shop at Southwick Engine Works; and to Watkin & Hawkins (L), for Rev. R. Morrisey, for RC church at Hylton-rd., Pennywell estate.—TP approval to Wm. & T. R. Milburn for layout of houses at High Barnes estate; and to G. T. Brown & Son (F), for C. P. Wallace, for layout of 10 det. houses at Bainbridge House.

Sunderland.—Site at Hylton Red House estate to be conveyed to CofE authorities for erection of church and church buildings.

Swinton and Pendlebury.—UDC proposes erection of 9 shops and maisonettes at Clifton Neighbourhood Unit.

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Walsall.—TC proposes erection of aged persons' home at Ryecroft-pl., £69,800 est.—Wolverhampton Die-Casting Co., Ltd., Grainsley Hill, Wolverhampton, propose erection of new factory at Bloxwich.

Warrington.—Lancashire United Transport Co., Ltd., propose erection of new bus depot at Winwick.

West Lancs.—RDC proposes erection of 45 houses at Tarleton.

Whiston.—RDC approved erection of new buildings and canteen at Eccleston for Pilkington Bros., Ltd.

Wimborne and Cranborne, Dorset.—RDC to build 51 houses in 1956 programme.

Wolverhampton.—HC recommends removal of 107 temporary bungalows at Willenhall-rd. (South) estate and their replacement by 180 new houses.

Worthing.—Eight-acre industrial estate is being established at junction of Worthing and Horshamrds., opposite Angmering Station, by Crawley Metal Productions, Ltd., and tenders have been invited from selected firms for erection of engineering factory covering 26,000 sq. ft. (est. cost £65,000-£70,000) for this company, who propose to offer sites for five other factories and possibly shops and flats. A: H. C. Wolledge, 66, Goring-rd., Worthing.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Bath.—Shops, maisonettes and flats at High-st., Weston, for City C: *Plummer & Hockey, Radstock, £37,474 (subject to approval of MoH & LG).

Bath.—Six flats and 6 maisonettes at St. John's-rd., for City C: *F. J. Amery & Sons, Ltd., Bath, £24,860.

Birmingham.—Foundation work of final section of first instalment of new Colleges of Technology, Commerce and Art at Gosta-green: *Robert Douglas (Contrs.), Ltd., £173,273.

Canterbury.—24 maisonettes at Military-rd. estate, for City C: *K. A. Hawkes, Ltd., £33,551.

Cardiff.—First stage of construction of Wales Empire Pool: *Davies, Middleton & Davies, Ltd., Cardiff.

Carlisle.—Office block at Harraby industrial estate, for Automatic Coal Cleaning Co., Ltd. A: G. W. Danson, 54, Lowther-st., Carlisle: *John Laing & Son, Dalston-rd., Carlisle.

Greenock.—Second stage of central clearance scheme of houses. A: James Bell, DSO, MBE (F), 180, Hope-st., Glasgow: *MacCallum & Co. (Bldrs.), Ltd., Townhead Works, Lochgilphead, Argyllshire.

Heywood.—20 houses at Wolsey-st., 14 at Peel-la. and 7 bungalows at Farm-st., for TC: *James Berry, Ltd., Heywood.

Huddersfield.—Crematorium at Bradley Bar, for TC: *J. Wimpenny & Co., Ltd., Linthwaithe, £68,251.

Liverpool.—Extension to factory at Linacre-la., Bootle, for Liverpool Electric Cable Co., Ltd.: *John Williams (Liverpool), Ltd., 70, Collingwood-st., Liverpool.

¶**London (Air Ministry).**—Works contracts to value £500 or over placed in week ended January 7:—*Artificers' work:* *Drabble Construction, Ltd., 44, Aylesbury-st., Bletchley, Berks. *Repairs to shed roof:* *W. H. Streeter, Ltd., 10, Tudor-rd., Hampton, Middx. *Dust-proofing of floors:* *Talbex, Ltd., 79, Lots-rd., SW10.

London CC.—Contracts recently placed:—
New service building at Meath-gdns., Bethnal Green: *J. A. Porter & Co., Ltd., £3,029; Block No. 1 of flats, ancillary buildings and other work at Lilestone estate (Ashbridge-st. site), St. Marylebone: *W. J. Marston & Son, Ltd., £60,415; Blocks 2, 3 and 6 and other work at Cobbett-st. site, Lambeth: *Kirk & Kirk, Ltd., £153,604; Block No. 1 of flats and Block No. 2 of two-storey maisonettes and other work at Newbery House extension site, Islington: *Thomas & Edge, Ltd., £85,113; (a) Blocks 1 and 2 at Galloway estate, and (b) Blocks 1-7 at Dingle-la. site, Poplar: *Rowley Bros., Ltd., (a) £68,422, (b) £88,180; Planting of greens at Borehamwood estate, Hertfordshire: *A. Stevens, senr., £3,986; Blocks Nos. 1-7 at Chillingworth-rd. site, Islington: *Tersons, Ltd., £165,970; Block of flats, shops and pram stores, together with external works, at Dickens estate extension (Jamaica-rd.), Bermondsey: *Thomas & Edge, Ltd., £73,367; Blocks Nos. 9, 16, 17, 21, 22, 23 and 27 of dwellings and other work at Clapham Park estate (Clarence-ave. site), Wandsworth: *J. M. Hill & Sons, Ltd., £225,599; Electrical installations at Armada and Benbow cottages, Hughes Fields estate, Greenwich: *Haines & Sheppard, Ltd., £3,951; Laying out gardens at Lawson-st., Southwark: *St. Mary's (Contractors), Ltd., £3,601; Installation of gas water heaters at Becontree estate (Group 1), Essex: *Clark, Hunt & Co., Ltd., £12,638; Internal and external painting and repairs at Liverpool-rd. estate (Group 4), Islington: *C. & F. Bryen, Ltd., £3,945; Supply and erection of (a) 164 tenants' store sheds at Hornsey Rise and Caledonian estates, Islington, and Ossulston estate, St. Pancras, and (b) 207 tenants' store sheds at Sumner estate, Camberwell, and Ernest Dence estate, Greenwich: *A. B. C. D. (Raynes Park), Ltd., (a) £4,851, (b) £5,935; Bowling green pavilion at Millwall Park, Poplar: *George Newton & Hill, Ltd., £3,535.

¶**London (MoW).**—Contracts placed in week ended December 24:—*Derbyshire:* PO, Palace-rd., Buxton, erection of M.T. workshops, *Cooper Bros. & J. Clayton, Ltd., Catherine-st., Macclesfield. *Hampshire:* Greenhill-rd., Winchester, erection of 18 houses at Prison Commission housing site, *Hampshire (Contrs.), Ltd., Winnall-cl., Winchester. *Hertfordshire:* Building Research Station, Garston, near Watford erection of 200 ft. by 30 ft. storage building, *Haymills (Contrs.), Ltd., Empire House, Hangar-gr., W5. *Lancashire:* HPO, Abingdon-st., Blackpool, internal decorations and cleaning, *Walmsley & Sons (Blackpool), Ltd., 9, Birley-st., Blackpool. *London:* Monarch TE, Wood-st., EC2, external and internal decorations, *Clark & Fenn, Ltd., 16, Old Town, Clapham, SW4. *Middlesex:* NPL, Teddington, extension to air receiver gantry and new compressor house, *Smith Walker, Ltd., 16, Caxton-st., SW1. *Somersetshire:* PO Stores, Bristol-rd., Bridgwater, additions, alterations and external decorations, *H. W. Pollard & Sons, Monmouth-st., Bridgwater, Som.

Contracts placed in week ended December 31:—*London:* 22-26, Woodgrange-rd., Forest Gate, E7, adaptations and redecorations, *Bowden & Willis, Ltd., 24-30, Wouldham-st., E16: 17, North Audley-st., W1, internal decorations, *South London Decorators, Ltd., 9, Streatham High-rd., SW16. *Yorkshire:* IRO, Britannia House, Bradford, adaptations, *J. Pullan & Sons, Ltd., Marley-terr., Beeston, Leeds 11.

¶**London (War Dept.).**—Works contracts placed in week ended December 31:—*Essex:* Painting and decorating, *Donald Humberstone & Co., Ltd., Louth. *Hampshire:* Painting, *Decorative Painting Contractors, Ltd., Hounslow. *London:* Heating and hot water installation, *J. B. Jackson & Ptnrs., Ltd., London, SW1. *Norfolk:* Miscellaneous, *W. F. Pointer & Sons, Ltd., Norwich. *Shropshire:* Civil engineering, *M. A. Boswell (Contrs.), Ltd., Wolverhampton

Manchester.—Aged persons' home at Hardy-la., Chorlton-cum-Hardy, for TC: *Frank Marsland, Stockport.

Manchester.—132 dwellings at Ridgeway-st., Ancoats, and 26 at Chapel-la., Blackley, for TC: *Direct labour.—Mental health occupation centre at Victoria-ave., Blackley, for TC: *Parker & Calvert, Ltd., Heywood.—Conversion of Smedley-rd. sch. as sec. mod. sch., for EC: *Hy. Green & Son (Bldrs.), Ltd., Manchester.

Mansfield.—40 houses, for TC: *Geo. Wimpey & Co., Ltd., London.

Newcastle-on-Tyne.—Six-storied block of offices on site of Cross House, Westgate-rd., for Dickinson, Miller & Turnbull: *Stanley Miller, 17, North-st., Newcastle, C13.

Newton Aycliffe.—14 shops, for Ravenseft Properties, Ltd., 52, Charles-st., W1. A: Lionel H. Fewster & Ptnrs. (L), 22, Conduit-st., W1: *G. Wimpey & Co., Ltd., Orchard House, Newcastle-on-Tyne.

Northallerton.—Additions to Council Offices, for UDC. S: A. J. Hardy-King, 72, High-st. North: *J. O'Malley, North-rd.

Notts.—Erection of proposed Clifton Comprehensive boys sch., for CC: *Gilbert-Ash, Ltd., 2, Stanhope-gate, W1.

Otley.—32 houses at Weston-la. estate, for TC: *Geo. Wimpey & Co., Ltd., London, £42,988.

Peterlee.—48 houses at Dene House site, for Peterlee Development Corporation, Shotton Hall, Castle Eden. Chief A: W. J. Scott (F.): *G. M. Pearson & Son, Front-st., Hetton.

Peterlee Development Corp.—48 dwellings at Dene House development. Chief A: W. J. Scott (F), Shotton Hall, Castle Eden, Co. Durham. QS: G. J. Antcliff: Clery & Sons, £81,379; Lane Fox & Co., Ltd., £74,291; R. J. Edwards & Co., £72,482; *G. M. Pearson & Son, Ltd., 19, Front-st., Hetton-le-Hole, Co. Durham, £70,302.

Plymouth.—Eastern Approach viaduct from St. Andrew's roundabout to Gasking-st., for City C. City E.: †James Miller & Ptnrs., Hayes, Middx., £91,063.

Rugby.—213 houses and flats, 5 shops and 24 garages at School-st., Long Lawford, for RDC: *Geo. Wimpey & Co., London, £304,173.

Saltburn.—60 houses and bungalows at Church-rd. housing estate, Marske, for UDC. S: R. Stroughair, Council Offices, Saltburn: *Premier Dwellings, Ltd., 157, Albert-rd., Middlesbrough.

Southwell.—Following, for RDC: 16 dwellings at Edwinstowe, *A. R. Jackson, Worksop, £19,293; 16 at Ollerton, *C. A. Warden, Derby-rd., East Kirkby, Nottingham, £17,066.

Sunderland.—Factory additions (30,000 sq. ft.), for Thorn Electrical Co., Pallion. A: S. W. Milburn & Ptnrs., 9, Esplanade: *Randle & Co., Ltd., Back Dunelm.

Thornaby-on-Tees.—Office additions, for Head Wrightson & Co., Ltd., Teesdale Ironworks: *John Laing & Son, Dalston-rd., Carlisle.

Walthamstow.—Motor car showroom, Hoe-st., for BC. Boro' A, E&S: F. G. Southgate, BA, MIMunE, MTPI (A), Town Hall: *James Webb & Son (Bldrs.), Ltd., 325, St. John-st., Clerkenwell, EC1.

Workington.—Additions to Workington Rayon Mills. A: R. Ward & Ptnrs. (F), 33, St. George's-dr., SW1: *John Laing & Son, Dalston-rd., Carlisle.

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